Otto Meyerhof

The Difficult Life of a Nobel Prize Winner

By

Michael Schmitt

Otto Meyerhof: The Difficult Life of a Nobel Prize Winner

Edited by Michael Schmitt

This book first published 2023

Ethics International Press Ltd, UK

British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

Print Book ISBN: 978-1-80441-245-9

eBook ISBN: 978-1-80441-246-6

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Preface

In the year in which we celebrate 1,700 years of Jewish life in Germany, Heidelberg University commemorates the Jewish physician and biochemist Otto Meyerhof, who was awarded the Nobel Prize for Medicine 100 years ago, with a lecture series.

I am very pleased about this, because we should honor the significant cultural contributions made by many Jews in the fine arts, music, literature and science, but we must also always keep in mind the darkest times of these 1700 years, when Jews were persecuted and expelled, cruelly mistreated and murdered in bestial ways. German universities and colleges did not offer any significant resistance to the inhuman ideology of National Socialism and suspended numerous academics from their duties as early as 1933. Respect for the persecuted and murdered Jewish scholars demands that they be remembered.

We owe the initiative for this lecture series to Professor Michael Schmitt of the Medical Faculty of the University of Heidelberg, who in his introductory lecture introduced us to the scientific achievements and the deep humiliations and sufferings of the Jew Otto Meyerhof. A life from the award of the greatest scientific honor, the Nobel Prize, to the revocation of his teaching license and flight to the United States. A life from the award of the greatest scientific honor, the Nobel Prize, to the revocation of his teaching license and his flight to the United States. The life of a man who was an exemplary scientist and showed true human greatness when, after all the atrocities and crimes of the National Socialist dictatorship, he resumed scientific contact with Heidelberg University.

The topic of the expulsion of Jewish scientists during the National Socialist regime touches me very much, because I myself had the opportunity to meet Orientalists in Israel who had managed to escape to Palestine. I would just like to mention the distinguished Arabist and Israel Prize winner Joshua Blau, who recently passed away at the age of 101.

The name Meyerhof is not unknown even to an Orientalist like me. Otto Meyerhof's cousin, Max Meyerhof, was not only a famous ophthalmologist but also a distinguished Arabist. He began his medical studies in Heidelberg, but then continued them in Strasbourg, where he was also able to study Oriental studies with his maternal cousin, the Egyptologist Wilhelm Spiegelberg - a fateful decision. Otto Meyerhof was still a teenager when he took a trip to Egypt with Max Meyerhof. Max must have been so fascinated by the country that he settled there permanently two years later and opened an ophthalmology practice. In addition, he translated medical writings from Arabic and wrote treatises on Arabic medical history. Still in 1932 he received a call to the chair of medical history at the University of Bonn, which he declined because he recognized the danger inherent in the rise of National Socialism. He was thus spared the fate of his cousin Otto. Max died in Egypt and was buried in the Jewish cemetery in Cairo. His works on the history of Arabic medicine were republished in three volumes by the Institute for the History of Arabic-Islamic Sciences at the Johann Wolfgang Goethe University in Frankfurt in 1997.

History is also the field of expertise of Professor Frank Engehausen from the Department of History, whom I had the pleasure of introducing during this ring presentation. One of his main areas of work is the history of National Socialism in regional historical perspectives. With his lecture on anti-Semitism at Heidelberg University from 1933-1945, Frank Engehausen sheds light on the fates of Jewish lecturers and deals with the ousting of Jewish students from the university. He thus places the fate of Otto Meyerhof in a larger context. To have the terrible crimes and atrocities of an inhuman dictatorship like the National Socialist regime as the subject of research is certainly one of the most difficult tasks of a historian.

In my review of Utz Maas's three-volume work on the persecution and emigration of German-speaking linguists from 1933-1945, I wrote: "The psychological stresses to which Maas was subjected in researching this work can be felt in many places," because, according to Maas, "Tracing the persecution forces one to follow in the footsteps of the persecutors."

All contributors to this lecture series therefore deserve our respect for their research and thanks for their contributions published in this volume, which help to preserve the memory of the cruel fates of Jewish scholars under National Socialism.

Prof. Dr. Werner Arnold
Rector
Heidelberg University of Jewish Studies

Foreword by the Editor

100 years ago, Otto Meyerhof was awarded the "Nobel Prize in Physiology or Medicine" for his pioneering work on glycogen metabolism. Otto Meyerhof then suffered a great deal during the National Socialist era. This important topic was also brought to the attention of the general public in view of the current resurgence of anti-Semitism with Heidelberg University's Ruperto Carola Ring Lecture "Otto Meyerhof - A Scientist's Life between Fame and Expulsion" in the summer semester of 2021. Scholars from various disciplines addressed the topic from the perspective of their discipline in the lecture series conceived by the Rectorate and myself. This volume is adapted from the presentations of the respective speakers.[1]

I would like to thank the Rector of the University of Heidelberg, Prof. Dr. Bernhard Eitel, for his support of the content of the lecture series and for providing the necessary funds. I thank the Rector of the Heidelberg University of Jewish Studies (HfJS), Prof. Dr. Werner Arnold, for discussions in the run-up and for his foreword to this volume. My special thanks go to the Meyerhof family, especially to Mr. David Meyerhof, a grandson of Otto Meyerhof, for providing many documents and photographs from the family treasure.

I thank Prof. em. Dr. med. Wolfgang Eckart for his great and important work "The University of Heidelberg under National Socialism" and his tips for the lecture series. Unfortunately, Prof. Eckart has passed away in the meantime, we want to keep a blessed memory of him.

Prof. em. Dr. Eberhard Hofmann and Prof. em. Dr. Renate Ulbrich-Hofmann are to be thanked: as excellent connoisseurs of Otto Meyerhof's life and work, they supported this work with many references and documents in the form of letters and articles.

[1] Since the contributions originate from different disciplines, the formal conventions customary there in each case, for example with regard to the structure or the citation method, have been retained.

I would like to thank Prof. Dr. Kai Johnsson, Dr. John Wray and Mr. Herbert Zimmermann for their work on the history of the Max Planck Institute (formerly: the Kaiser Wilhelm Institute) for Medical Research and their dedicated provision of information.

I would like to thank Dr. Ingo Runde, Director of the Archives of Heidelberg University, for providing and digitizing the personal files of Otto Meyerhof and the related documents from the university's Nazi period.

Ms. Monika Conrad and Ms. Fuhrmann-Koch deserve thanks for the excellent organization of this event.

And finally, I sincerely thank all the lecturers who, with passion and commitment, have ventured with me on this exploratory journey through the life of Otto Meyerhof and the aspects of Jewish life in Germany.

We publish this volume in the hope of learning from the past. May memory be a reminder to us to uphold what is good and courageous in people.

Heidelberg, July 2023 / Tammuz 5783

Michael Schmitt
Editor

Contributors

Prof. Dr. Walter Nickel has been conducting research at the Biochemistry Center of Heidelberg University (BZH) since 2000 and has been Professor of Biochemistry at Heidelberg University since 2004. After studying and earning his doctorate at the University of Göttingen, he conducted postdoctoral research at the Memorial Sloan-Kettering Cancer Center in New York City (USA) and at Heidelberg University, where he habilitated in 2001. Since 2019, he has been the Dean of Studies for the Bachelor's and Master's programs in biochemistry at Heidelberg University. Walter Nickel is speaker of the Collaborative Research Center "Molecular Switches in the Space-Time Control of Cellular Signal Transduction" (SFB/TRR 186 Heidelberg/Berlin) and since 2021 Executive Director of the BZH. His research focuses on the molecular mechanisms for the unconventional secretion of fibroblast growth factor 2 from cancer cells, a process that plays a critical role in tumor-induced angiogenesis. In addition, his research group at BZH is developing novel inhibitors of cellular release of FGF2 that may serve to prevent chemoresistance in the treatment of acute leukemia.

Prof. Dr. Marc-Philippe Weller has been Director at the Institute for Foreign and International Private and Commercial Law at Heidelberg University since 2014. Previously, he studied and received his doctorate in Heidelberg and Montpellier (Licence en droit), habilitated in Cologne (2008) and held chairs at the Universities of Mannheim (2008 - 2011) and Freiburg (2011 - 2014). Visiting professorships in The Hague, Gothenburg, Paris, Taipei, Washington and Vienna, among others. Prorector for International Affairs at Heidelberg University (since 2019). Co-editor of, among others, the Zeitschrift für Unternehmens- und Gesellschaftsrecht (ZGR), the Zeitschrift für Europäisches Privatrecht (ZEuP) and, together with Prof. Dr. Wolfgang Kahl, editor of the Handbuch Climate Change Litigation (2021).

Greta Göbel is a research assistant and dotoral fellow at the Institute for Foreign and International Private and Commercial Law at the University of Heidelberg, Chair of Prof. Dr. Marc-Philippe Weller. Studies at the Ruprecht-Karls-University Heidelberg as well as Université de Lorraine, Nancy (France) (2015-2021).

Dr. Markus Lieberknecht is currently pursuing graduate studies (LL.M.) at Harvard Law School as a Fulbright Scholar and works there as an assistant to Prof. Holger Spamann. Previously, he worked as an attorney in the Dispute Resolution Department at SZA Schilling, Zutt & Anschütz in Mannheim (since 2020, currently on leave of absence), received his doctorate under Prof. Dr. Marc-Philippe Weller at the Institute for Foreign and International Private and Commercial Law at the University of Heidelberg (2018 - 2021), completed his legal clerkship at the Hanseatic Higher Regional Court in Hamburg, Berlin and Karlsruhe (2016 - 2018) and studied in Passau and Istanbul (2009 - 2015).

Prof. Dr. Frank Engehausen teaches Modern History at the Department of History of Heidelberg University. His work focuses on 19th and 20th century German history; he has published on the 1848/49 Revolution, National Socialism, Southwest German regional history, and the history of Heidelberg University, among other topics. He is a member of the Commission for Historical Regional Studies in Baden-Württemberg. In 2006 and 2007, Engehausen investigated the "History of the Josefine and Eduard von Portheim Foundation for Science and Art 1919-1955" on behalf of the University and the City of Heidelberg, and from 2014 to 2017 he coordinated the research project "History of the State Ministries in Baden and Württemberg during the National Socialist era." Currently, his book "Tatort Heidelberg. Everyday Stories of Repression and Persecution 1933-1945" was published.

Professor Dr. Michael Wolffsohn is one of the leading experts on the analysis of international politics and not least the relations between Germans and Jews on the state, political, economic and religious levels. The historian and publicist regularly speaks out on

important political, military, historical and religious issues. On topics such as the future of the Bundeswehr, the Middle East and other world conflicts, German-Israeli relations, or the history and present of Judaism, he has made a name for himself with precise analyses and clear statements. He was Professor of Modern History at the University of the Federal Armed Forces in Munich from 1981-2012 and received, among other honors, the Order of Merit of the Federal Republic of Germany in 1988. Prof. Dr. Michael Wolffsohn was historian and publicist, and university lecturer of the year 2017, books with including "Deutschjüdische Glückskinder" (as a children's and young people's book in 2021), "Tacheles", "Zum Weltfrieden".

Prof. Dr. Natan Sznaider, born in Mannheim in 1954 as the child of stateless survivors of the Shoah from Poland, went to Israel at the age of 20 and studied sociology, psychology and history at the University of Tel Aviv. In 1984, he received his doctorate from Columbia University in New York with a thesis entitled "The Social History of Compassion." He is a retired professor of sociology at the Tel Aviv Academic College. Most recently published: Vanishing Points of Memory. On the Presence of the Holocaust and Colonialism. Hanser, 2022.

Prof. Dr. Frederek Musall studied Jewish Studies, Islamic/Arabic Studies, Semitic Studies and Comparative Religion in Heidelberg and Jerusalem. He received his PhD in 2005 from Prof. Dr. Yossef Schwartz (Tel Aviv University) and Prof. Dr. Raif Georges Khoury, (Ruprecht-Karls-Universität Heidelberg) on the two medieval Jewish philosophers Moses Maimonides and Chasdai Kreskas. From 2015 till 2023 he was Associate Professor (W2) of Jewish philosophy and intellectual history at the Heidelberg University of Jewish Studies. In the summer semester of 2016, he was Visiting Professor and Deputy Executive Director of the Institute for Jewish Studies at Martin Luther University Halle-Wittenberg. At the beginning of the summer semester 2017, he was appointed Deputy Rector of the Heidelberg University of Jewish Studies. In 2023 he was appointed as a Full Professor (W3) for Jewish Studies at the Würzburg University. His research interests include philosophical, theological, and mystical

Jewish traditions of thought (especially in its multiple relations to corresponding Arab-Islamic traditions of thought), processes of Jewish identity formation, Jewish popular culture, and methodology in Jewish Studies. His most recent publication is "And at last we could talk ..." Eine Handreichung zu jüdisch-muslimischem Dialog in der Praxis, Freiburg: Herder 2020.

Prof. Dr. Michael Schmitt has been Siebeneicher Endowed Professor for Cellular Immunotherapy and Head of the GMP Laboratory for Cell Product and Vaccine Manufacturing at Heidelberg University, Germany, since 2011. He studied Medicine and Oriental Studies at Saarland University in Homburg, Germany with semesters abroad at Tel-Aviv University and Harvard Medical School, Boston, USA. 1992 PhD with Prof. Richard Berberich on iron metabolism and erythrocytes. Then research stay 1994-98 in Japan with Prof. H. Shiku on topics of tumor vaccination. Specialist in internal medicine, hematology, oncology and clinical infectiology and habilitation on immunogenic leukemia antigens at the University of Ulm. At the University of Rostock 2009-2011 head of stem cell transplantation. 1999 Novartis Research Prize, 2005 Felix Skubiszewski Medal of the Medical University of Lublin and 2008 Hans-Jochen-Illiger Memorial Prize. Part of Michael Schmitt's research group conducts research in the laboratories of the Otto Meyerhof Center (OMZ), which was founded by Heidelberg University in 2001.

Dr. Avinoam Reichman began his studies in General and Comparative Literature at the University of Frankfurt and eventually switched to studying human medicine at the Justus Liebig University of Giessen. After graduating in 2020, he completed his PhD under Prof. Michael Schmitt at Heidelberg University Hospital on the topic of "Cellular Immunotherapy". During his studies, he completed numerous stays at Israeli Torah schools (Yeshivot) in Tel Aviv and Jerusalem, among other places. He is currently working as a resident at the University Hospital of Regensburg.

Prof. Monika Schwarz-Friesel is a cognitive scientist and antisemitism researcher. She is head of the Department of Language and Communication at the Technical University of Berlin. Her

empirical research focusses on both historical and contemporary manifestations of Jew hatred, the Israelization of antisemitism and on the emotional basis of antisemitism. Her latest research projects deal with Jew- hatred on the internet 2.0, and most recently with the re-traumatization in the third generation of Jews in Germany. She has published several books on antisemitism, among them *"Inside the Antisemitic Mind"*, with Jehuda Reinharz, 2017, Boston, USA. She is Member of the Advisory Board for Antisemitism Studies (USA) and the scientific board of the *Journal of Contemporary Antisemitism* (UK), as well as Chair of the board of trustees of the Rabbiner-Leo-Trepp-Stiftung.

Chapter One

Otto Meyerhof: A Researcher's Life Between Fame and Expulsion

Michael Schmitt and Avinoam Reichman

100 years ago, Otto Meyerhof was awarded the Nobel Prize for Medicine, which he then received in 1922 for his pioneering work on glycogen metabolism. Otto Meyerhof suffered a great deal during the National Socialist era. In view of the current resurgence of anti-Semitism, this important topic is being brought to the attention of the general public with the Ruperto Carola Lecture Series at Heidelberg University, "Otto Meyerhof - A Scientist's Life between Fame and Expulsion" this summer semester. Scientists from various disciplines addressed the topic from the perspective of their discipline in the lecture series conceived by the Rectorate and Prof. Schmitt. This volume contains the lectures of the respective speakers, in a form written down by them. In the hope of reviving the past in the present, the memory serves as a vigil to uphold the good and the courage in human beings.

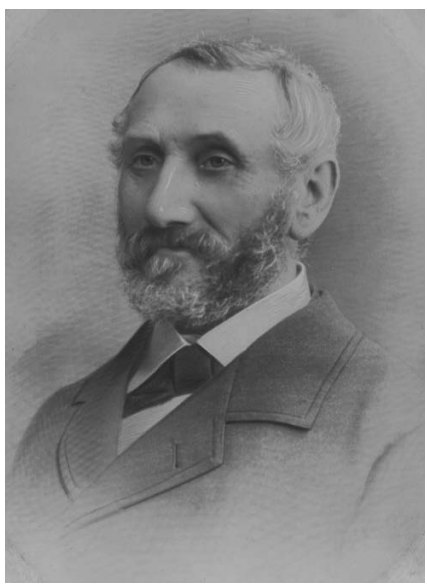


Figure 1: Israel Meyerhof, 1811-1855

The Meyerhofs were established textile merchants in Hildesheim since the beginning of the 18th century. Israel Meyerhof (1811-1885) (Fig. 1), Otto Meyerhof's paternal grandfather, was a "white goods", i.e. textile

merchant[1]. Like so many of his contemporaries, he ventured the step from manufactory to industrialization.[1] His products consisted of "Barchent" products, a textile mixture of linen and cotton.[1] Due to him, the family left Hildesheim, which had been inhabited since the 18th century, to finally settle in Berlin via an intermediate stay in Hanover.[1] Israel Meyerhof was still firmly integrated into the social structures of his Jewish fellow citizens at that time. He was regularly involved in the synagogue community. His father Isaak Meyerhof had set up a foundation for poorer schoolchildren from Jewish families.[1]

Figure 2: Otto Meyerhof's birthplace

Israel Meyerhof's son, Felix Meyerhof (1849-1923), then moved with his wife Bettina Meyerhof, née Mai (1862-1915), to what would later become Otto Meyerhof's birthplace, near the Opera House next to today's Cafe Kröpcke (Fig. 2).[1] Otto Meyerhof (1884-1951) and his siblings Therese (1882-1971) and Walter (1886-1930) (Figs. 3 + 4)[1], were born there. Felix Meyerhof then moved to Berlin with his family and Otto, who was four years old at the time, to run the newly

[1] Selke, W. and C. Heppner (2017). The family of the Nobel Laureate Otto Meyerhof in Hannover, in book: Hannoversche Geschichtsblaetter 71 (2017), pp. 156-166.

Figure 3: Bettina Meyerhof, with her children Therese and Otto, in November 1884.

Figure 4: Felix and Bettina Meyerhof, with their children Therese, Otto and Karl, in 1890.

founded company I. Meyerhof, a manufactory goods store, with his siblings. There, Otto Meyerhof prepared for university during his school years.[3] Already as a teenager he fell ill with a chronic kidney disease, which confined him to bed at an early age and gave him the opportunity to study philosophy and especially the literature of Goethe. From then on, Goethe's writings, poetry and work on natural research accompanied him throughout his life. Meyerhof said about Goethe's scientific work, especially about "The Theory of colors", that it was not an exact science, nor did he want it to be. It was not the creation of a natural scientist, but of a nature lover. Goethe himself had said that he was not interested in grasping the world mathematically and physically.[2]

Figure 5: Max Meyerhof (1874- 1945)

Due to Otto's many stays in several cure centers, the family decided, among other things, that Otto should travel to the Nile together with his cousin Dr. Max Meyerhof (Fig. 5), physician and Egyptologist.[3] Max Meyerhof was fluent in Arabic and was highly regarded by the locals as the ophthalmologist "Dr. Max".[2] He eventually became vice president of the local Ophthalmological Society, vice president of the German Archaeological Institute in Cairo, and continued to write orientalist, largely historical, works on Arabic medicine and pharmacology. He translated for example the text "The Ten Treatises on the Eye," written around the 9th century by Hunain Ibn Is-Haq (808-873), from Arabic into English.[3] In 1945, Max Meyerhof was buried in the Ashkenazi synagogue in Cairo. Otto Meyerhof, who was affected by that travel throughout his life, was newly interested in archaeology and Islamic art, and had a strong commitment to patients living in poverty, inspired by his cousin. He graduated from high school in Berlin in 1903 and began studying medicine and philosophy at the universities of Berlin, Strasbourg, and Heidelberg afterwards.[3] In Berlin, he met Leonard Nelson (Fig. 6), who later became a professor of philosophy in Göttingen.[4]

[2] Hofmann E (2016) Otto Warburg und Otto Meyerhof – die Geschichte einer Freundschaft BIOspektrum 6:662-664

[3] Hofmann E (2016) Otto Meyerhof – Humanist und Naturforscher: Von der Philosophie zum Nobelpreis. Acta Historica Leopoldina 65:299–369

[4] Ekkehard H. Theodor Lessing – Otto Meyerhof – Leonard Nelson – Bedeutende Juden in Niedersachsen, Niedersächsische Landeszentrale für politische Bildung, 1964

Figure 6: The "New Friesian School" of philosophy with Leonard Nelson (2nd from left) and Otto Meyerhof (4th from left). The only lady is Hedwig Schallenberg who married Otto later.

Leonard Nelson's philosophy was based on Kant's critique of reason. He dealt with the criticism by, and a critical handling of reason with itself. Nelson's primary interest continued to be the formation of the foundations of an ethics that makes it possible to consider the interests of the parties in conflict through dialogue. Thus, he extended Kant's Categorical Imperative to include the experiential world of the individual. Nelson's understanding of philosophy was strongly influenced by the Socratic teaching method. It was central not to indoctrinate students with facts, but to encourage them to think for themselves.[2]

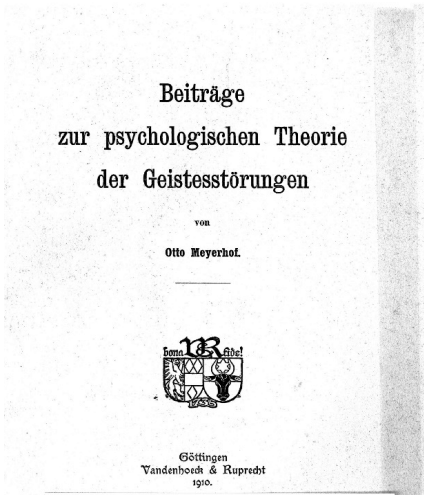
He had a lifelong friendship with Nelson, which was expressed in intensive correspondence between the two. Through Nelson, Meyerhof was introduced to philosophy. A few years later, he also acted as a mediator between a philosophical dispute between Nelson and the New Kantian Ernst Cassirer.[2] The writings of Immanuel Kant and Jakob Friedrich Fries were of particular interest to the young students. Thus, Leonard Nelson founded the New Friesian School in 1903.[2] Representatives of different disciplines, mathematicians, physicians, and philosophers met there regularly in Göttingen to exchange ideas on philosophical topics.[2] Hedwig Schallenberg also met Otto Meyerhof there. They married in 1914 (Fig. 7).

Figure 7: Wedding of Otto (2nd from left) und Hedwig (3rd from left), Hedwig's mother (5th from left) and her sister and father (6th and 7th from left)

Meyerhof and Nelson were not primarily interested in politics, but they were socially engaged. Even as students at Berlin University, they gave evening classes for workers.[2] This was intended not only to improve the education of the working class, but also to awaken in the students a sense of social obligation in order to alleviate social antagonisms. The authorities of the time viewed this commitment as questionable: "It was likely to seduce students into indolence in their studies." Thus, in 1922, the Westphalian daily newspaper "die Glocke" headlined an article on Meyerhof's receipt of the Nobel Prize with the title: "The industrious Nobel Prize winner. "[3] Despite this supposed industriousness, Otto Meyerhof finally passed his state examination in medicine with the grade 1.

After a stay in Strasbourg in 1905, where Otto studied Goethe's writings on natural research, especially the theory of colors, Meyerhof finally arrived in Heidelberg in 1907 as a medical student and doctor for the poor. There Meyerhof met the psychiatrist and psychoanalyst Arthur Kronfeld (1886-1941), as well as the physiologist Viktor von Weizsäcker (1886 - 1957), the Jewish cell physiologist and biochemist Otto Warburg (1883 - 1970), with whom he was to remain in friendship throughout his life, and the philosopher Karl Jaspers (1883 - 1969).

He wrote his dissertation thesis (Fig. 8) with Ludolf von Krehl (1861-1937), which was partly influenced by this circle of people, around 1910 under the title: "Contributions to the Psychological Theory of Mental Disorders."



Beiträge
zur psychologischen Theorie
der Geistesstörungen

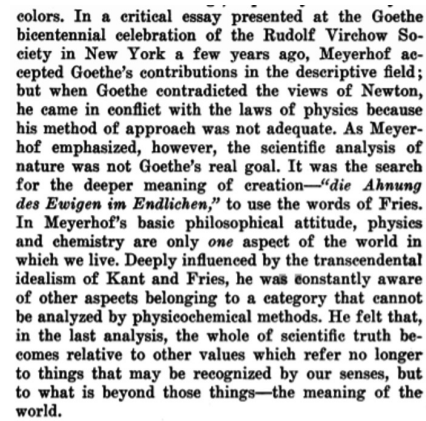
von

Otto Meyerhof.

Bonna Rhenus

Göttingen
Vandenhoeck & Ruprecht
1910.

Figure 8: Otto Meyerhof's Dissertation, Contributions to the Psychological Theory of Mental Disorders 1910



colors. In a critical essay presented at the Goethe bicentennial celebration of the Rudolf Virchow Society in New York a few years ago, Meyerhof accepted Goethe's contributions in the descriptive field; but when Goethe contradicted the views of Newton, he came in conflict with the laws of physics because his method of approach was not adequate. As Meyerhof emphasized, however, the scientific analysis of nature was not Goethe's real goal. It was the search for the deeper meaning of creation—*"die Ahnung des Ewigen im Endlichen,"* to use the words of Fries. In Meyerhof's basic philosophical attitude, physics and chemistry are only *one* aspect of the world in which we live. Deeply influenced by the transcendental idealism of Kant and Fries, he was constantly aware of other aspects belonging to a category that cannot be analyzed by physicochemical methods. He felt that, in the last analysis, the whole of scientific truth becomes relative to other values which refer no longer to things that may be recognized by our senses, but to what is beyond those things—the meaning of the world.

Figure 9: Obituary by Severo Ochoa

An obituary in the journal Science in 1951 of Meyerhof's later student and Nobel laureate Severo Ochoa (fig. 9) says: "It was the search for deeper meaning of creation-"the presentiment of the eternal in the finite," to use the words of Fries. "In Meyerhof's basic philosophical attitude, physics and chemistry are only one aspect of the world in which we live." This holistic or integrated view of the world shaped Otto's entire life and work.

Otto Meyerhof met Otto Warburg (Fig. 10) while he was still a student in Heidelberg. He accompanied Warburg to Naples in 1911 for a research stay at the local Zoological Station. Both later worked together for several years at the Kaiser Wilhelm Institute for Biology in Berlin-Dahlem (Fig. 11).[5] Warburg's father was also of Jewish descent and at the time a physics professor in Freiburg im Breisgau and president of the Physikalisch-Technische-Reichsanstalt

[5] Hofmann E (2016) Otto Warburg und Otto Meyerhof – die Geschichte einer Freundschaft BIOspektrum 6:662-664

Figure 10: Otto Warburg (1883-1970)

Figure 12: Ludolf von Krehl (1861- 1937)

Figure 11: Kaiser Wilhelm Institute for Biology in Berlin-Dahlem, 1940.

in Berlin. Thus Warburg already got to know the great scientists of his time at home, including Albert Einstein, Emil Fischer, Walther Nernst and Max Planck. Otto Warburg received his doctorate under Ludolf von Krehl "On oxidation in living cells after experiments on the sea urchin egg (Fig. 12)." As early as 1912, he became head of department at the Kaiser Wilhelm Institute of Biology in Berlin-Dahlem. There, too, his main interest remained the study of biological oxidation-reduction processes (see chapter 2 by W. Nickel). Otto Meyerhof, inspired by Warburg's work on sea urchin eggs, first began his own marine biological work. At this time, his gradual detachment from philosophy occurred in favor of experimental natural history

Figure 13: Archibald Vivian Hill (1886-1977), with Otto Meyerhof

Figure 14: Otto and Hedwig Meyerhof in Kiel

research.[6] In return for his friend Warburg, however, Meyerhof was only granted an unpaid assistantship at the Physiological Institute of Kiel University in 1912, where he habilitated in 1913.[7] In 1922, Otto Meyerhof, together with Archibald Vivian Hill (1886-1977) (Fig. 13), received the Nobel Prize in Physiology/Medicine for their research on the physiology of muscle and, in particular, the relationship between oxygen consumption and lactic acid production in muscle.[8] In the same year, the Jewish physiologist and mentor of Meyerhof, Rudolf Höber (1873-1953), established a new chair for physiological chemistry in the Physiological Institute of the Medical Faculty in Kiel and proposed Otto Meyerhof for it. This was followed by a discriminatory rejection on the part of the Institute on the grounds that "Höber was already a Jew".[9] Thus, the deeply offended 38-year-old Otto Meyerhof, who had just been awarded the Nobel Prize, remained a private lecturer in an assistant position at the Kiel Institute (Fig. 14). Mediated by Otto Warburg, among others, Meyerhof finally received a position as director of the Kaiser Wilhelm

[6] Hofmann E (2016) Otto Warburg und Otto Meyerhof – die Geschichte einer Freundschaft BIOspektrum 6:662-664

[7] Hofmann E (2016) Otto Warburg und Otto Meyerhof – die Geschichte einer Freundschaft BIOspektrum 6:662-664

[8] The Nobel Prize in Physiology or Medicine 1922. NobelPrize.org. Nobel Prize Outreach AB 2021. Sun. 27 Jun 2021. <https://www.nobelprize.org/prizes/medicine/1922/summary/>

[9] Eckart, W. U., et al. (2006). Die Universität Heidelberg im Nationalsozialismus, Springer Berlin Heidelberg.

Institute (KWI) for Medical Research in Heidelberg.[10] The Kaiser Wilhelm Society (KWG) created new institutes for basic medical research as early as the 1920s. For example, the KWG negotiated a plan to establish an institute in "Heidelberg for the entire field of experimental medicine, in which in particular the border areas between medicine, physiology, chemistry and physics should be researched".[11] The Baden government agreed to incorporate the new institute in Heidelberg into the Institute for Experimental Cancer Research. This had been founded in 1906 by Vincenz Czerny (1842-1916). The decision to found the Heidelberg KWI was taken in 1927, and the inauguration of the new building designed by the architect Hans Freese took place three years later (Fig. 15), at the end of May 1930 (Fig. 16). After the occupation of the institute by American troops in March 1945, it was incorporated and renamed the "Max Planck Institute (MPI) for Medical Research" in 1948.[11]

Figure 15: Kaiser-Wilhelm Institute in Heidelberg

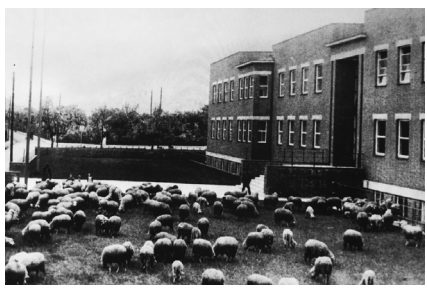


Figure 16: Kaiser-Wilhelm Institute in Heidelberg, 1930.

The time in Heidelberg was very pleasant and productive for Otto Meyerhof. It was also during this time that he wrote one of Meyerhof's major works, „Die Chemischen Vorgänge im Muskel und ihr Zusammenhang mit Arbeitsleistung und Wärmebildung. In this book, Meyerhof pays special tribute to the contributions and achievements of his student Karl Lohmann (1898-1978), discoverer of adenosine triphosphate (ATP) (see Chapter 2 by W. Nickel).

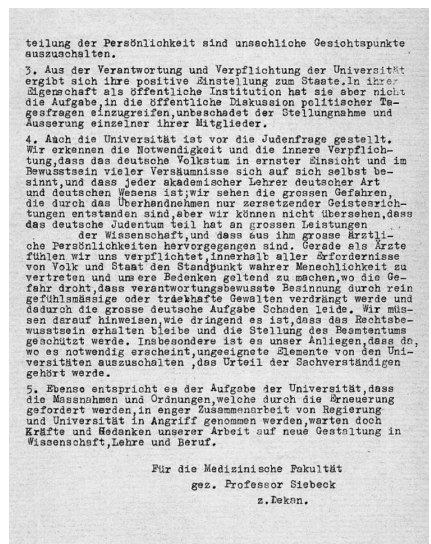
[10] Eckart, W.U. Max-Planck-Institut für medizinische Forschung Heidelberg, Denkorte, Max-Planck-Gesellschaft und Kaiser-Wilhelm-Gesellschaft; Brüche und Kontinuitäten; 1911 - 2011 Dresden: Sandstein-Verl., 2010.

In 1991, Gottfried Meyerhof summarized his father's time in Heidelberg as follows[11]: *"My father had very regular and sedate habits. In the twenties and thirties he usually got up at about half past eight in the morning and then had breakfast, usually reading the newspaper, after the children had already gone to school. Around ten o'clock he went to the institute on foot, or in Heidelberg often by bicycle, and came home at one o'clock for lunch with the family. Because of a sensitive stomach, he was given a light diet, with which he enjoyed red wine. He then took a nap with a black bandage over his eyes. After a then enjoyable tea, he went back to the Institute about half past three in the afternoon, where he worked until about half past five. After dinner with the family, he retired to his study at home [...]." It continues, "He almost always wrote his papers and letters by hand; the manuscripts were put on paper in pencil so that they could be more easily improved, before he dictated them to his private secretary at the Institute. He rarely typed letters himself at home, and always answered his correspondences promptly. Of his publications, which averaged almost monthly during his forty years of scientific activity, he wrote many in the name of his collaborators, so that they too would have their right to publication. He decided himself on the employment of his collaborators, from whom he always demanded handwritten applications so that they could be examined by a friend and graphologist with regard to personal characteristics. [...]. With the same intentions, Max Planck, the president of the Kaiser Wilhelm Society, and other influential scientists also came to our house at that time for talks, which were usually conducted with the shutters down and in a low voice, during which I was occasionally allowed to offer cigarettes, but then had to leave the room as quickly as possible. [...] A very liberal man, he voted for the Social Democrats; he was a pacifist and a member of the International Rotary Club. Like many others, he initially believed that the political turnaround of 1933 would last only a short time. He often emphasized that at no other place he would get such a professionally satisfying place to work with such reliable and capable scientific and technical staff in an institute set up entirely according to his wishes as in Heidelberg."*

[11] Prof. Dr. Gottfried Meyerhof, Erinnerung an das Leben von Otto Meyerhof in Deutschland; Naturwissenschaftliche Rundschau, Heft 10; 44. Jahrg., 1991.

In March 1933, a momentous break in Germany's history occurred with the seizure of power by the National Socialists under their leader Adolf Hitler.[12]

Hitler transformed Germany into a dictatorship, bringing all areas of public life into line according to the Führer principle. Thus, on April 5, 1933, two days before the "Reich Law for the Restoration of the Professional Civil Service," the "Baden Decree on Jews" was published.[13] It was the first decree to "suspend all Jews in public service. Under the pretext of a "strong disturbance of the population" it was ordered that "for the protection and in the interest" of the Jews of Baden all state employees "of the Jewish race" be granted leave until further notice. On April 7, 1933, the order was carried out by the Reich Law for the Restoration of the Professional Civil Service: "(§3) Civil servants and employees of 'non-Aryan descent' shall be retired or lose their teaching credentials, unless they or their fathers had been participants in the war or had been in state service without interruption since August 1, 1914)." "Non-Aryan" descent, according to this law, meant descent from at least one Jewish grandparent, without regard to whether they converted to Christianity or not. As a result of this law, 21 professors, private lecturers and lecturers had to leave the university in Heidelberg.[17] There were also moderate voices against the decision of April 5: Dean Richard Siebeck (Fig. 17) declared the planned dismissals



teilung der Persönlichkeit sind unsachliche Gesichtspunkte auszuschalten.

3. Aus der Verantwortung und Verpflichtung der Universität ergibt sich ihre positive Einstellung zum Staate.In ihrer Eigenschaft als öffentliche Institution hat sie aber nicht die Aufgabe,in die öffentliche Diskussion politischer Tagesfragen einzugreifen,unbeschadet der Stellungnahme und Äusserung einzelner ihrer Mitglieder.

4. Auch die Universität ist vor die Judenfrage gestellt. Wir erkennen die Notwendigkeit und die innere Verpflichtung,dass das deutsche Volkstum in ernster Einsicht und im Bewusstsein vieler Versäumnisse sich auf sich selbst besinnt,und dass jeder akademischer Lehrer deutscher Art und deutschen Wesens ist;wir sehen die grossen Gefahren, die durch das Überhandnehmen nur zersetzender Geistesrichtungen entstanden sind,aber wir können nicht übersehen,dass das deutsche Judentum teil hat an grossen Leistungen der Wissenschaft,und dass aus ihm grosse ärztliche Persönlichkeiten hervorgegangen sind. Gerade als Ärzte fühlen wir uns verpflichtet,innerhalb aller Erfordernisse von Volk und Staat den Standpunkt wahrer Menschlichkeit zu vertreten und unsere Bedenken geltend zu machen,wo die Gefahr droht,dass verantwortungsbewusste Besinnung durch rein gefühlsmässige oder triebhafte Gewalten verdrängt werde und dadurch die grosse deutsche Aufgabe Schaden leide. Wir müssen darauf hinweisen,wie dringend es ist,dass das Rechtsbewusstsein erhalten bleibe und die Stellung des Beamtentums geschützt werde. Insbesondere ist es unser Anliegen,dass da, wo es notwendig erscheint,ungeeignete Elemente von den Universitäten auszuschalten ,das Urteil der Sachverständigen gehört werde.

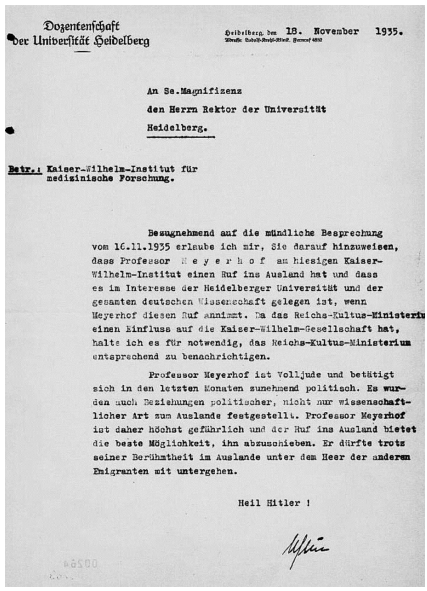
5. Ebense entspricht es der Aufgabe der Universität,dass die Massnahmen und Ordnungen,welche durch die Erneuerung gefordert werden,in enger Zusammenarbeit von Regierung und Universität in Angriff genommen werden,warten doch Kräfte und Gedanken unserer Arbeit auf neue Gestaltung in Wissenschaft,Lehre und Beruf.

Für die Medizinische Fakultät
gez. Professor Siebeck
z.Dekan.

Figure 17: Letter from the Dean, Richard Siebeck

[12] Fest, J. (1973). Hitler: eine Biographie, Ullstein. S.533ff.

[13] Dörflinger G (2012), Juden an der Universität Heidelberg Dokumente aus sieben Jahrhunderten, Ruprecht-Karls-Universität Heidelberg Universitätsbibliothek – Ausstellungen < http://www.tphys.uni heidelberg.de/Ausstellung/>



Dozentenschaft
der Universität Heidelberg

Heidelberg, den 18. November 1935.

An Se.Magnifizenz
den Herrn Rektor der Universität
Heidelberg.

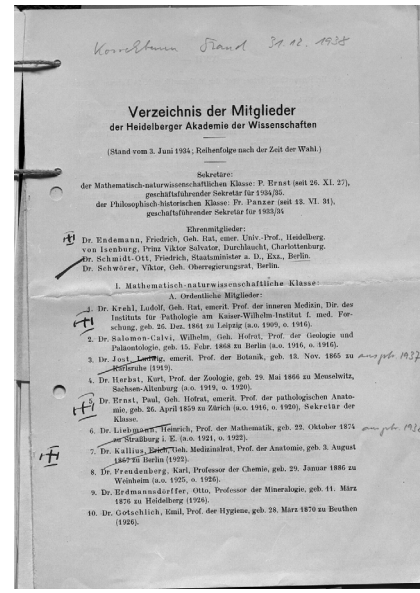
Betr.: Kaiser-Wilhelm-Institut für medizinische Forschung.

Bezugnehmend auf die mündliche Besprechung vom 16.11.1935 erlaube ich mir, Sie darauf hinzuweisen, dass Professor Meyerhof am hiesigen Kaiser-Wilhelm-Institut einen Ruf ins Ausland hat und dass es im Interesse der Heidelberger Universität und der gesamten deutschen Wissenschaft gelegen ist, wenn Meyerhof diesen Ruf annimmt. Da das Reichs-Kultus-Ministerium einen Einfluss auf die Kaiser-Wilhelm-Gesellschaft hat, halte ich es für notwendig, das Reichs-Kultus-Ministerium entsprechend zu benachrichtigen.

Professor Meyerhof ist Volljude und betätigt sich in den letzten Monaten zunehmend politisch. Es wurden auch Beziehungen politischer, nicht nur wissenschaftlicher Art zum Auslande festgestellt. Professor Meyerhof ist daher höchst gefährlich und der Ruf ins Ausland bietet die beste Möglichkeit, ihn abzuschieben. Er dürfte trotz seiner Berühmtheit im Auslande unter dem Heer der anderen Emigranten mit untergehen.

Heil Hitler !

Figure 18: Letter from Assistant Professor Hermann Schlüter to the Rector Wilhelm Groh, 1935



Vorläufig Stand 31.12.1935

Verzeichnis der Mitglieder
der Heidelberger Akademie der Wissenschaften

(Stand vom 3. Juni 1934; Reihenfolge nach der Zeit der Wahl.)

Sekretäre:
der Mathematisch-naturwissenschaftlichen Klasse: P. Ernst (seit 26. XI. 27), geschäftsführender Sekretär für 1934/35.
der Philosophisch-historischen Klasse: Fr. Panzer (seit 13. VI. 31), geschäftsführender Sekretär für 1933/34

Ehrenmitglieder:
Dr. Endemann, Friedrich, Geh. Rat, emer. Univ.-Prof., Heidelberg.
von Isenburg, Prinz Viktor Salvator, Durchlaucht, Charlottenburg.
Dr. Schmidt-Ott, Friedrich, Staatsminister a. D., Exz., Berlin.
Dr. Schwörer, Viktor, Geh. Oberregierungsrat, Berlin.

I. Mathematisch-naturwissenschaftliche Klasse:

A. Ordentliche Mitglieder:

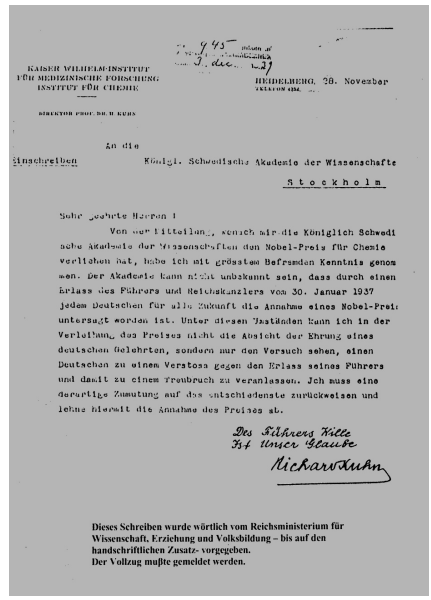
1. Dr. Krehl, Ludolf, Geh. Rat, emerit. Prof. der inneren Medizin, Dir. des Instituts für Pathologie am Kaiser-Wilhelm-Institut f. med. Forschung, geb. 26. Dez. 1861 zu Leipzig (a.o. 1909, o. 1916).
2. Dr. Salomon-Calvi, Wilhelm, Geh. Hofrat, Prof. der Geologie und Paläontologie, geb. 15. Febr. 1868 zu Berlin (a.o. 1916, o. 1916).
3. Dr. Jost, Ludwig, emerit. Prof. der Botanik, geb. 13. Nov. 1865 zu Karlsruhe (1919).
4. Dr. Herbst, Kurt, Prof. der Zoologie, geb. 29. Mai 1866 zu Meuselwitz, Sachsen-Altenburg (a.o. 1919, o. 1920).
5. Dr. Ernst, Paul, Geh. Hofrat, emerit. Prof. der pathologischen Anatomie, geb. 26. April 1859 zu Zürich (a.o. 1916, o. 1920), Sekretär der Klasse.
6. Dr. Liebmann, Heinrich, Prof. der Mathematik, geb. 22. Oktober 1874 zu Straßburg i. E. (a.o. 1921, o. 1922).
7. Dr. Kallius, Erich, Geh. Medizinalrat, Prof. der Anatomie, geb. 3. August 1867 zu Berlin (1922).
8. Dr. Freudenberg, Karl, Professor der Chemie, geb. 29. Januar 1886 zu Weinheim (a.o. 1925, o. 1926).
9. Dr. Erdmannsdörffer, Otto, Professor der Mineralogie, geb. 11. März 1876 zu Heidelberg (1926).
10. Dr. Gotschlich, Emil, Prof. der Hygiene, geb. 28. März 1870 zu Beuthen (1926).

Figure 19: List of University professors dismissed by December 31, 1935

of Jewish academics to be an "encroachment on the self-government of the universities and the civil service law."[14] Acknowledging the existence of a "Jewish question," Siebeck, a physician, called for "state action in the spirit of true humanity," referring to the "great scientific achievements of German Jewry." The letter, however, had no effect on the addressee, the Ministry of Culture. Meyerhof was personally involved for the first time in a letter dated November 18, 1935, from the head of the faculty, a resident named Hermann Schlüter (Fig. 18) to the then Rector Wilhelm Groh regarding an appointment of Meyerhof abroad: "Professor Meyerhof is a full Jew and is becoming increasingly politically active. Relations of a political and not only scientific nature with foreign countries have also been established. Professor Meyerhof is therefore highly dangerous and the appointment abroad offers the best opportunity to get rid of him." A list from the Rectorate (Fig. 19) of university professors dismissed by December 31, 1935 included, among others, the then honorary citizen and geologist Salomon Calvi (1868-1941) (see Chapter 3 by Frank Engehausen).

[14] Universitätsarchiv Heidelberg

Figure 20: Richard Kuhn (1900 – 1967)



KAISER WILHELM-INSTITUT
FÜR MEDIZINISCHE FORSCHUNG
INSTITUT FÜR CHEMIE

DIREKTOR PROF. DR. R. KUHN

HEIDELBERG, 28. November

An die
Einschreiben Königl. Schwedische Akademie der Wissenschafte
Stockholm

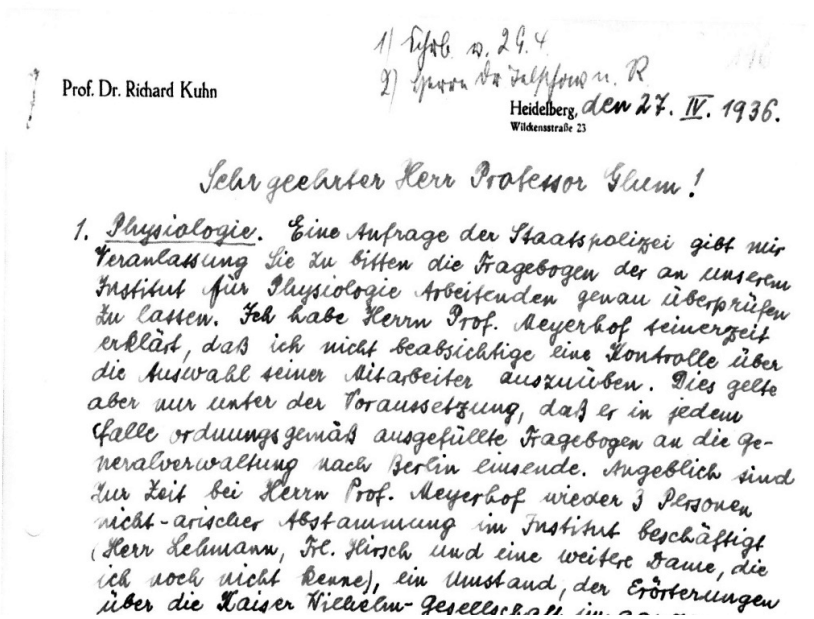
Sehr geehrte Herren !

Von der Mitteilung, wonach mir die Königlich Schwedi
sche Akademie der Wissenschaften den Nobel-Preis für Chemie
verliehen hat, habe ich mit größtem Befremden Kenntnis genom
men. Der Akademie kann nicht unbekannt sein, dass durch einen
Erlass des Führers und Reichskanzlers vom 30. Januar 1937
jedem Deutschen für alle Zukunft die Annahme eines Nobel-Prei
untersagt worden ist. Unter diesen Umständen kann ich in der
Verleihung des Preises nicht die Absicht der Ehrung eines
deutschen Gelehrten, sondern nur den Versuch sehen, einen
Deutschen zu einem Verstoss gegen den Erlass seines Führers
und damit zu einem Treubruch zu veranlassen. Ich muss eine
derartige Zumutung auf das entschiedenste zurückweisen und
lehne hiermit die Annahme des Preises ab.

Des Führers Wille
Ist unser Glaube
Richard Kuhn

Dieses Schreiben wurde wörtlich vom Reichsministerium für Wissenschaft, Erziehung und Volksbildung – bis auf den handschriftlichen Zusatz- vorgegeben.
Der Vollzug mußte gemeldet werden.

Figure 22: Letter from Richard Kuhn to the Nobel Academy in Stockholm



Prof. Dr. Richard Kuhn

Heidelberg, den 27. IV. 1936.
Wilckensstraße 23

Sehr geehrter Herr Professor Glum!

1. Physiologie. Eine Anfrage der Staatspolizei gibt mir Veranlassung Sie zu bitten die Fragebogen der an unserem Institut für Physiologie Arbeitenden genau überprüfen zu lassen. Ich habe Herrn Prof. Meyerhof seinerzeit erklärt, daß ich nicht beabsichtige eine Kontrolle über die Auswahl seiner Mitarbeiter auszuüben. Dies gelte aber nur unter der Voraussetzung, daß er in jedem Falle ordnungsgemäß ausgefüllte Fragebogen an die Generalverwaltung nach Berlin einsende. Angeblich sind zur Zeit bei Herrn Prof. Meyerhof wieder 3 Personen nicht-arischer Abstammung im Institut beschäftigt (Herr Lehmann, Fr. Hirsch und eine weitere Dame, die ich noch nicht kenne), ein Umstand, der Erörterungen über die Kaiser Wilhelm-Gesellschaft

Figure 21: Letter from Richard Kuhn, 1936

Otto Meyerhof was one of the four founding directors, along with von Krehl (pathology), Karl Wilhelm Hausser (physics) and Kuhn (chemistry), honorary professor at the university. One of his three colleagues in the directorate of KWI was Richard Kuhn (1900-1967) (Fig. 20), Nobel laureate in chemistry. Kuhn became department director of chemistry at the KWI for Medical Research in 1930. He lived as Otto Meyerhof's neighbor at Wilckensstr. 23 in Heidelberg. In 1937, after the death of Ludolf von Krehl, Kuhn took over the overall direction of the Institute. As a denunciation in 1936, Kuhn wrote in a letter to the general administration of the Kaiser Wilhelm Society in Berlin: *"Allegedly, three persons of non-Aryan descent are again employed at present by Prof. Meyerhof in the Institute (Mr. Lehmann, Miss Hirsch, and another lady whom I do not yet know)* (Fig. 21)." In 1938, Kuhn received a call for the Nobel Prize in Chemistry for his research on carotenoids and vitamins from the Swedish Committee and rejected it, due to the ban at that time by the government and its leader Adolf Hitler. Kuhn signed the rejection with the words, "The Führer's will is our faith (Fig. 22)." Three years after the end of World War II, he finally accepted the Nobel Prize in 1948. During wartime from 1939-1945, Kuhn worked on poison gas research and was a co-investigator on human experiments at the Heidelberg Tuberculosis Sanatorium, as well as at the Natzweiler concentration camp. In 1948 he became director of the now renamed Max Planck Institute for Medical Research. In 1950, he became a full professor at the University of Heidelberg. In 1951, Kuhn met Otto Meyerhof in Philadelphia; the following night, Otto Meyerhof died of a second heart attack. "Kuhn's career, meanwhile, continued to develop: he became vice president of the Max Planck Society in 1959 and president of the Society of German Chemists in 1964. "18 "After his death in 1967, BASF inaugurated a medal in his honor. "18 It was not until 2005, after the publication on Kuhn's life by Ute Deichmann, that the award was discontinued.

Ute Deichmann writes in her "Statement on his political behaviour during the time of the National Socialists with respect to the question: Can we declare that Kuhn was a role model for chemists?":[15]

> "Meyerhof, who emigrated to France after his release in 1938, from there during the war via Spain and Portugal to the USA (Philadelphia), formulated a long letter to Kuhn on 1.11.1946 (it contains the note: "not sent"), from which excerpts are quoted below. Meyerhof was not informed about all details of Kuhn's activities during the Nazi period, (e.g., he did not know about his combat gas research). *"It is not easy for me, after all the events of the last few years, to write to you openly in the spirit of our old comradeship and thereby to take a stand on the serious question you raise in your second letter. ... I acknowledge with gratitude that by preserving my group of co-workers, by keeping my former institute and my villa free, you took precautions to keep my return to Heidelberg open after the end of the Nazi reign of terror. However, I cannot be content with this recognition. In exchange for the loss of my old place of work, all my possessions and the temporary threat to my existence, I have now at least exchanged the advantages of freedom and self-determination, while you spent this time in a secure position and the ability to work, but in the moral nitrogen air of the Third Reich. This alone does not separate us, and I do not blame anyone for making compromises in order to maintain office and place of work. But you yourself went far beyond that. I cannot conceal the criticism levelled at you by your colleagues in the Allied countries for having voluntarily placed your admirable scientific achievement and chemical mastery in the service of a regime of whose unspeakable vileness and wickedness you were well aware. This was particularly painful to me myself, because I knew in what liberal spirit you had grown up and how this corresponded to your dispositions and nature."*

[15] Memento vom 11. Dezember 2007 https://web.archive.org/web/20071211082823/http://www.gdch.de/oearbeit/deich_kuhn.pdf : Richard Kuhn, 1900-1967, Stellungnahme zu seinem politischen Verhalten während der NS-Zeit unter der Fragestellung: Kann Kuhn als Persönlichkeit Vorbildcharakter in der Chemie zuerkannt werden

In 1947, the American military government in Heidelberg demanded an expert opinion on Kuhn from Meyerhof. In it Meyerhof wrote:

> *"... Professor Kuhn is an apolitical person. He enjoyed a liberal education, held democratic views during the Weimar Republic, and was a faithful and loyal student of the famous German-Jewish chemist R. Willstätter. Notwithstanding this fact, he acquiesced with the Nazi regime on a number of key issues. Apparently after I had lost my restraining influence on him (we had been in close cooperation for eight years) and after he had realized that the regime had irrevocably consolidated its power, he was prepared to compromise his great scientific reputation without scruple. My conviction is that he did this out of conformity and weakness of character, without ever sharing National Socialist convictions. Presumably he was not a party member. But for many years under the Nazi regime he was leader of the 'German Chemical Society' and head of the German chemical delegations to the International Congress in Rome (1939) and on other occasions. ... I am convinced that he is now, after a total reversal of fortune, serious in his efforts to cooperate with American authorities and willing to help alleviate the terrible atrocities committed by the Nazi regime. Presumably, he still justifies his earlier activities with the excuse that in this way he saved some scientific values and prevented worse crimes. But I do not share this view, which is held by numerous German scholars today. [According to Ebbinghaus/Roth (FN 5, p. 48), Kuhn justified his many political functions as protective measures to prevent worse]. The scientific achievement of Richard Kuhn is outstanding and of great importance. I strongly advocate that his scientific work remain unhindered and that he, together with his collaborators, be allowed to continue research for the benefit of science and industry. However, he should no longer be allowed to represent German chemistry in a leading position and should no longer be entrusted with the education of university students. I think that my view is shared by many colleagues in this country who know the work and personality of Professor Kuhn."*