Veröffentlichungen aus dem Archiv der Max-Planck-Gesellschaft

Begründet von Eckart Henning
Herausgegeben von Lorenz Friedrich Beck und Marion Kazemi

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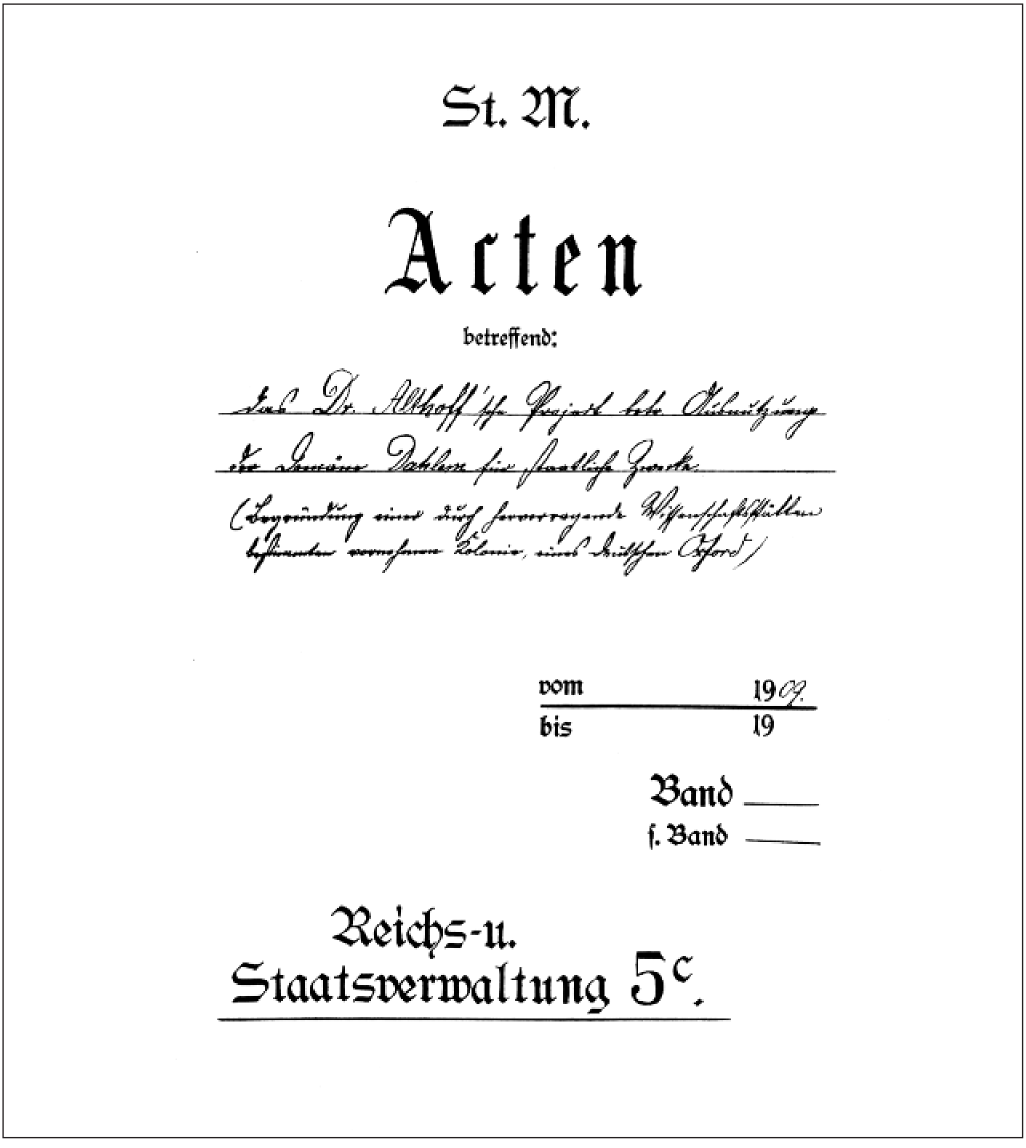

St. M.

Acten

betreffend:

das Dr. Althoff'sche Projekt betr. Ausnutzung der Domäne Dahlem für staatliche Zwecke (Begründung einer durch hervorragende Wissenschaftsstätten bestimmten vornehmen Kolonie, eines deutschen Oxford)

vom 1909.
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1. Cover page of a Prussian St[ate] M[inistry] file for "Dr. Althoff's Project for the Use of Domain Dahlem for Purposes of the State (founding of an exclusive community, predestined by scientific research institutes, a German Oxford)", 1909

Dahlem – Domain of Science

A walking tour of the Berlin institutes of the Kaiser Wilhelm / Max Planck Society in the "German Oxford"

by
Eckart Henning
and
Marion Kazemi

4th, expanded and updated edition

Berlin 2009

REDAKTION:
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Preface

This 16th volume, a guidebook for "re-runners" to a historical tour of the Kaiser Wilhelm / Max Planck Institutes, serves the historical public relations of the archives which also deals with its Dahlem environment. This "German Oxford", as it was planned by Friedrich Althoff, has been characterized as much by the original institutes of the Kaiser Wilhelm Society (as of 1912) as by the modern structures of its successor organization, the Max Planck Society. To trace these relationships, the authors first performed research of their own, then conducted tours for individual visitors to the archives or for groups. These guests expressed the desire to have this scientific-historical walk available not only as a leaflet with keywords, but also printed in detailed and illustrated form for all those interested. As a result "Dahlem – Domain of Science" appeared for the first time in issue 3/1993 in the series "Berichte und Mitteilungen" published by the Administrative Headquarters of the Max Planck Society; in 1998 the updated English printing "Dahlem – Domain of Science" was published as issue 1/1998, not only for foreign archive guests, but also for the Dahlem Max Planck Institutes. Due to the fact that the two issues had all been distributed and "Berichte und Mitteilungen" were no longer published, the publishers decided to issue a bilingual printing of the archives' series. Following a number of reprints of the third edition (2002), the editors decided to publish a new edition, in separate German and English volumes, because otherwise one book would have simply become too large. Like the third edition, this fourth edition has also been updated and expanded, not only because Dahlem and its institutes continue to undergo change, but because the historians have made further advances in analyzing the past, in particular the national-socialist era. "Forschung im Spannungsfeld von Politik und Gesellschaft, Geschichte und Struktur der Kaiser Wilhelm / Max-Planck-Gesellschaft", published in 1990 by Rudolf Vierhaus and Bernhard vom Brocke and "Die Kaiser-Wilhelm-/ Max-Planck-Gesellschaft und ihre Institute", also published by Bernhard vom Brocke – together with Hubert Laitko – set the stage. Both publications, to which the Archives of the Max Planck Society made contributions, encouraged the Presidium of the Max Planck Society, under the chairmanship of Hans F. Zacher in their decision to deal with the national-socialist era in more detail, so that his successor Hubert Markl charged an independent Presidential Commission under Reinhard Rürup (Berlin) and Wolfgang Schieder (Cologne) with the task in 1999. To that end, at the behest of the Archives Ulrike Kohl developed a subject-oriented inventory of sources "Kaiser-Wil-

helm-Gesellschaft im Nationalsozialismus" (1997). To the extent that results concerning Dahlem are available from the Presidential Commission, which concluded its work in 2004, they have been included in the description of the institutes in this tour. The Commission has been continuously publishing their findings in what now totals 28 "Results" ("Ergebnisse") and since 2000 have produced 17 volumes of the "History of the Kaiser Wilhelm Society in the National Socialist Era" ("Geschichte der Kaiser-Wilhelm-Gesellschaft im Nationalsozialismus") with varying degrees of relevance to Dahlem.

Due to the fact that it is simply not enough to only examine the era of the Third Reich, regardless of how important it is, but that Dahlem's contribution to the history of research in the larger context should also be examined, the Archives organized, in conjunction with the Department of the History of Science at the Humboldt University of Berlin (Rüdiger vom Bruch) a symposium on "Wissenschaftsfördernde Institutionen im Deutschland des 20. Jahrhundert" (= Dahlemer Archivgespräche, 5) in February 1999 in the Willstätter House and in May 2000 took part in another conference of the same department at the Harnack House supported by the German Research Association on the interaction mechanisms between "Sciences and Science Policy", where the role of the Kaiser Wilhelm / Max Planck Society in the scientific structure was interpreted in detail. These lectures have also been published in 2002. A third conference organized jointly by the Department of the History of Science and the Leibniz Society in the Willstätter House in October 2008 dedicated itself to the scientific-political impact Althoff had in Prussia and comparable activities in other German states and European countries.

The authors considered the references to the state of research in the last few years which are noted in bracketts to be recommendable because they are more legible than footnotes, which we have continued to avoid. Those who require more detailed bibliographic references than those provided by the index should refer to the bibliography from Petra Hauke (3 parts, 1994) and the Archives' website. For memoranda refer to the chronicles of the Kaiser Wilhelm Society (1988) and the Max Planck Society (1992, 1998) and the Archives' inventory developed by Christel Wegeleben (1997), an updated version on the Archives' website. A chronicle of the "Dual Society", a handbook of the history of the institution and a documentation of all the Dahlem references, the three-volume anniversary edition being prepared to commemorate the 100th anniversary of the Kaiser Wilhelm / Max Planck Society (1911–2011) will be equally important as a source of relevant material.

This volume does not seek to serve either as a history of Dahlem (Engel, 1984) or a history of Berlin science (Laitko, 1987), nor does it claim to deal with all the "Dahlemer Erinnerungsorte" (2007). Rather these excerpts should serve as a trail through the research developments of the first Institutes of the Kaiser Wilhelm / Max Planck Society in Dahlem.

If it inspires the reader to take a walk through the area or is used as an aid in such tours it will have served its purpose – to familiarize Supportering and Scientific Members, employees and guests, fellows and friends of this, Germany's largest basic research society, with its roots.

The authors of this booklet were able to access the considerable collection of source materials and corresponding literature at the Archives of the Max Planck Society. We would like to express our gratitude to Petra Hauke (library), Georg Herrmann (archives), Dagmar Klenke and Susanne Uebele (photographs), Oliver Sander (Ruska Building, amongst others), and Christel Wegeleben (specific research). Furthermore, we are grateful to the public relations officers Dr. Patricia Marquardt (Max Planck Institute for Molecular Genetics), Jochen Schneider and Dr. Hansjakob Ziemer (Max Planck Institute for the History of Science) as well as Beatrix Wieczorek (Fritz Haber Institute of the Max Planck Society) for revisions and amendments.

Berlin-Dahlem, October 2009 Eckart Henning, Marion Kazemi

Introduction

There are four Dahlems in Germany, two in the Eifel region, one in the Lüneburger Heide and one in the southwest of Berlin that forms a community in the district of Steglitz-Zehlendorf. This fourth village has become famous. Scientific debate has carried the name to all corners of the world, even leading to the "Dahlem Myth" from which the "Dahlem Conferences" still lives and the "Dahlemer Archivgespräche" recall. It was called into existence when Friedrich Althoff (1839–1908), once the "omnipotent" ministerial director in the Prussian Ministry of Culture and Education, initiated "the founding of a colony auspicious for its superior research centers, a German Oxford" in Dahlem. It did not, however, just spring to life, but was planted on the dry and sandy fields of a medieval village in the hills of the Teltow, known in the 19th century primarily for potatoes and sheep. The

2. St. Annen, Dahlem village church, Königin-Luise-Straße at the corner Pacelli-Allee

last farmers still living in Dahlem village had been resettled by the manor lord in 1803 (a political episode known as the "Separation"), so that by 1841 all of the residents were subjects of this noblemen. Charlotte von Gerlach then sold the estates Dahlem and Steglitz, which she had inherited from her father, the Prussian Chancellor C.F. von Beyme, to the local financial office. While Steglitz was partitioned within two years, Dahlem (500 ha), which was leased by various farmers, remained the property of the state until the end of the 19th century. Despite very enticing offers, amongst others from J.W. von Carstenn, who in 1872 proposed to the Ministry of Agriculture that a colony of villas be established, the finance office waited until 1901 when property values were increasing before it set up a "Commission for the division of the Dahlem domain". This commission carried out the necessary development activities for the transformation of poor, unprofitable farmland into land for development, including the subdivision planned to Walter Kyllmann. "It was a geometrically simple network of streets, the basis of which can still be seen in the south-

3. The manor at Domain Dahlem

4. Groß-Lichterfelde rapid transit station

5. Thielplatz subway station

east in the area of Ehrenbergstraße and Ladenbergstraße. Villas and mansions were constructed here, but so too were the four-story apartment houses of the Beamten-Wohnungs-Verein (Civil Service Housing Association) between Rudeloffweg and Von-Laue-Straße" (Freitag, 1987). Heinrich Schweitzer and Hermann Jansen (monument on Faradayweg) made significant changes in the building plans between 1907 and 1911, better adapting the route of the streets to the landscape. These changes called for the planning and construction of single family dwellings on larger tracts of land on winding streets and the transformation of the marshy areas in Schwarzer Grund into parks (Thiel and Triest Parks). The row houses in some of the streets, which are not typical for Dahlem, came as a result of war and inflation.

Dahlem would probably not have been able to assume its intended role of a "German Oxford," were it not so conveniently located on the Wannseebahn (rapid transit line to Wannsee). The Groß-Lichterfelde station, constructed in 1871/72, was the "gateway" to Dahlem. The non-stop, so-called "bankers' trains" made it possible to reach downtown Berlin in a very short time. In addition, an extension of the subway line (the so-called

"Dahlem Express") from Breitenbachplatz to Dahlem was planned. The construction was completed (using the trench method) between 1911 and 1913, adding the stations Podbielskiallee, Dahlem Dorf and Thielplatz. Heinrich Straumer designed what was then the terminal station at Thielplatz as a "smaller translation of the most famous of German country mansions, Haus Freudenberg, as constructed by Hermann Muthesius in 1907/08" (Berlin und seine Bauten, 1979). Beside the subway and rapid transit links and bus connections, the tram line via Königin-Luise-Straße to Grunewald which went into operation in 1905, completed a superb infrastructure for the residential and research district. After the Second World War, a freeway connection was added using the tank route on Hüttenweg which had been built by the Americans.

Against the resistance of the Prussian Minister of Agriculture and Finance, who was interested in increasing state revenues, the Minister of Culture and Education insisted that it was necessary to reserve property in Dahlem for the expansion of state institutions. These institutions, museums, the University, Academy of Sciences and related research institutions were no longer able to acquire the space in the center of the city which their expanding range of tasks required. Althoff developed farseeing relocation plans or partial relocation plans for most of these institutions according to their individual demands. On March 3, 1908 the final concept was then presented to Kaiser Wilhelm II by the Ministry of Culture and Education in the form of a "Summary". This presentation could be viewed as Althoff's "legacy". Although he had retired in 1907, Althoff appears to have had "considerable influence" as an "external consultant" to the Ministry in the writing of the manuscript (Engel, 1984). Although there were barriers of all sorts, obstinacy, financial and political difficulties confounding the transformation of Dahlem into a modern research center, Althoff had accomplished a lot and set many more things in motion which could only be implemented under different circumstances, long after his death. What he attained, beside the founding of the Kaiser Wilhelm Society for the Advancement of Science, was the construction of the first two institutes of the Friedrich Wilhelms University in Dahlem, the Pharmaceutical Institute (1902) and the Institute for Plant Physiology (1913) near the Botanical Gardens, which Althoff had had moved from Schöneberg (1892) and where he lies buried. That the Royal Gardening School (Königliche Gärtner-Lehranstalt) then came to Dahlem (1903) was a logical consequence. Furthermore, the new building of the "Asian Museum" in Arminallee (start of construction 1914, completion 1921, later used as the archives for the Ethnology Museum) was built according to plans from Bruno Paul. This structure, known then as "Museum Dahlem" housed many of the artistic treasures returned after the end of World War Two (Painting Gallery, Ethnology Museum, Museum for Indian, Islamic and East-Asian Ethnology with works of international stature). A num-

ber of buildings were also constructed to house senior government agencies, such as the Royal Testing Office (1902/04), now the Federal Agency for Materials Research and Testing, the Royal Astronomical Institute with the Seminar for Scientific Mathematics of the University (1912), today Institute for Islamic Studies of the Free University of Berlin. Buildings were also erected for the State Agency for Water Hygiene (1913), today still a part of the Federal Environmental Office and the Prussian Secret State Archives (1915/24). Two further research institutions from the Reich which took up residence in Dahlem should be mentioned, namely the independent Bacteriological Department of the Reich's Health Office (1903/06), today Federal Institute for Risk Assessment, and the Imperial Agency for Agriculture and Forestry, which was derived from the Reich's Biology Department and is today the Federal Biology Agency for Agriculture and Forestry. First it had been planned to erect a new building for the Reich's Archives on the property.

On the day of his death, October 20, 1908, Althoff was actually supposed to make a presentation to Kaiser Wilhelm II – who had often stepped in to spur development and mediate conflicts – on the establishment of non-academic research institutes on the Dahlem property. Unfortunately, he was only able "to conceive, not execute" his pet project (Hellpach, 1929). His second-in-command, Friedrich Schmidt (-Ott), was able to use the "Summary" from the Spring and other papers when the Kaiser charged him with the task of immediately compiling "Althoff's Plans for Dahlem" and presenting them to the State Ministry in the form of a white paper in March 1909. These met with particular interest on the part of his highness and resulted in the Ministry of Finance reserving 50 hectare (the original plans had called for 100 hectare) for the sciences in the Dahlem domain. Schmidt's draft, on which Phillip Brugger also worked, formed the most important basis of the "Confidential White Paper" from Adolf (von) Harnack dated November 21, 1909. This paper already established the objective of founding numerous research facilities with the name "Kaiser Wilhelm Institutes for Scientific Research", and proposed the founding of a "Royal Prussian Society for the Advancement of Science". In his white paper, Harnack compared the desperate situation of the sciences in Prussia with those of the wide ranging aid available to the sciences in foreign countries (especially England, France and the USA) through private endowment. With all the weight of his authority and his well-known personal interest in inventions and scientific discovery, the Kaiser threw himself into the fray for the establishment of the new research organization. At its founding on the occasion of the 100th anniversary celebration of the Friedrich Wilhelms University in Berlin on October 11, 1910, he stated, "...Humboldt's great scientific plan demands, along with the Academy of Sciences and the University, independent research institutes as an integrating component for the entire scientific organism. The founding of such institutions in Prussia

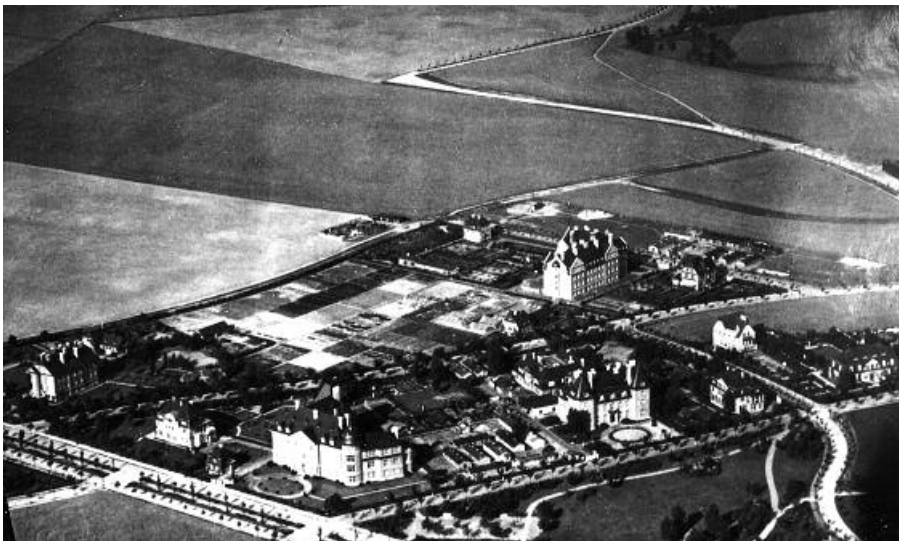
6. 'Guests of the prince of peace: The three wise men delivering their Christmas presents'

has not kept up with the development of universities and this gap, namely in our natural sciences, will become increasingly sensitive as a result of the dramatic advances the sciences are making. We need institutions which exceed the boundaries of the universities and are unimpaired by the objectives of education, but in close association with academia and universities, serving expressively the purpose of research ... To be able to guarantee the facilities a permanent endowment, it is My desire to establish under My protectorate and in My name a society whose task it is to establish and maintain research institutions. I will gladly supply this society with the means at My disposal. It will be the task of My government to see to it that government aid is available to the extent that it is needed. May today not just mark the celebration of the anniversary of the Berlin University, but simultaneously be further step in the development of the German intellectual spirit."

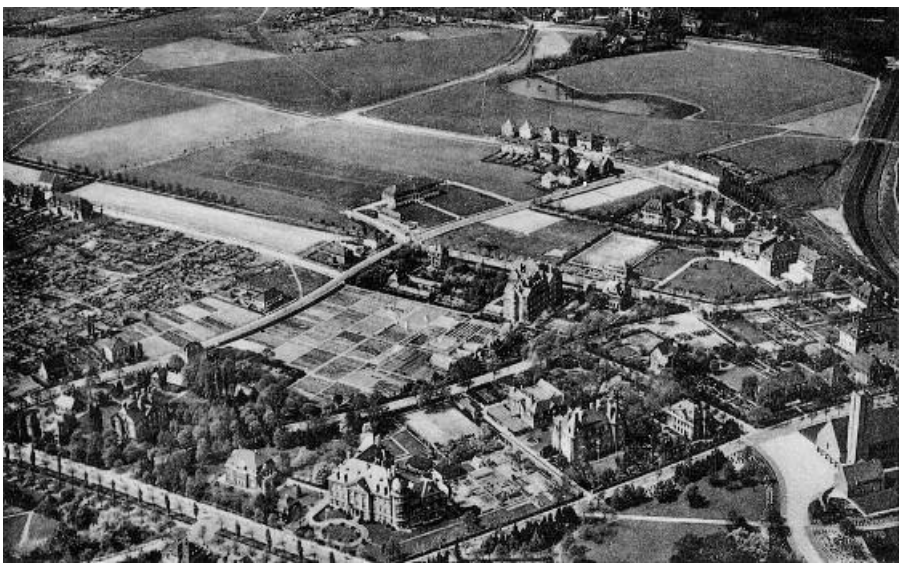
The founding meeting of the Kaiser Wilhelm Society for the Advancement of Science, today the Max Planck Society, took place on January 11, 1911 in the presence of the Kaiser. It was followed by an afternoon lecture by Nobel prize-winner for chemistry Emil Fischer (1852–1919) on the "Recent successes and problems in chemistry" in the large hall of the Academy of the Arts on Pariser Platz. Under the chairmanship of the Prussian Minister of Culture August von Trott zu Solz the founding members, each of whom had pledged to pay an initiation fee of at least 2,000 Mark, passed the by-laws which had been drafted by the Ministry. The annual dues were set at 1,000 Mark. The aim of the society, which was independent of all "official influence," was "to promote the sciences, especially by means of founding and maintaining scientific research institutes". Harnack was named the first president and as soon as October 23, 1912 the Kaiser was able to open the first representative buildings in Dahlem, the Kaiser Wilhelm Institute for Physical Chemistry and Electrochemistry on Faradayweg and the Kaiser Wilhelm Institute for Chemistry in Thielallee. Ernst Eberhard von Ihne (1848–1917, knighted 1906), the court architect whose late classic structures still mark the center of Berlin even after two world wars (Marstall, Bode Museum, Staatsbibliothek), was selected by the Kaiser to be the architect. His designs were built by Max Guth (1859–1925), who was also responsible for the planning of the laboratories. The two architects were also responsible for the Dahlem Kaiser Wilhelm Institutes for Experimental Therapy (1913) and for Biology (1915).

While the buildings constructed or taken over in the first years after World War I – Kaiser Wilhelm Institute for Metals Research (1920), for Fibers Chemistry (1920), the Entomological Museum (1922) and for Silicate Research (1926) – did not have a uniform architectural style, this changed when Professor Carl Sattler (1877–1966), a student of Adolf von Hildebrand and Paul Wallot, was charged with the task of designing new buildings. It was said of him that, "he had the talent to think his way into the wishes of the

Aerial photographs of the Dahlem Kaiser Wilhelm Institutes



7. Around 1918



8. Beginning of the thirties

9. View from the steeple of the Jesus Christus Church toward Zehlendorf. In the foreground: Willstätter villa; left in the background: Kaiser Wilhelm Institute for Biology, behind that the Kaiser Wilhelm Institute for Cell Physiology and for Physics (with white tower); right: Kaiser Wilhelm Institute for Silicate Research, behind that Harnack House (ca. 1939)

builder/owners and thereby find appropriate solutions" (Glum, 1964). He built the Institute for Anthropology, Human Genetics and Eugenics (1927), the Harnack House (1929) and the Institutes for Cell Physiology (1930 with Wilhelm Heising) and for Physics (1936) in what became known as the "Kaiser Wilhelm Society style."

Due to the fact that most of the Kaiser Wilhelm Institutes were moved out of Dahlem during the Second World War and did not return to Berlin because of the precarious political situation, the remaining institutions were consolidated into the German Research Academy in the American Sector in 1947. The habitable, but no longer needed, buildings of the Kaiser Wilhelm Society were therefore put at the temporary disposal of the Free University of Berlin in 1948 (2,140 students) when it was founded as a counterweight to the Humboldt (previously Friedrich Wilhelms) University in the Soviet sector. The polit-

ical division of Berlin brought Althoff's plans to fruition – as well as those of Eduard Spranger, the interim President – to relocate the Berlin University to Dahlem for reasons of space, albeit later than planned and under completely different circumstances.
The first of the FU's own buildings in Dahlem was the Mensa (student dining hall, 1952), designed by Hermann Fehling and Peter Pfannkuch and the Henry Ford Building (1954/55) with the main auditorium according to plans from Heinrich Sobottka and Gustav Müller and the University Library on the grounds of the Kaiser Wilhelm Institute for Biology. In 1958 the building for the Department of Business and Economics and in 1959 the building for the Law School were also erected here (1957: 7,630 students). These construction projects were preceded by years of negotiations with the Kaiser Wilhelm Society (in liquidation) and the Max Planck Society, which had reassumed the remaining assets in the city after the dissolution of the German Research Academy in 1953. A real estate contract, signed by all parties on July 3, 1957, established the mutual ownership and usufructuary rights on the Dahlem property of the institute. Without this basis the FU would not have been able to exist and the Max Planck Society would not have been able to build its Institute for Molecular Genetics, as designed by Rolf Gutbrod, on the Dreipfuhl property.

Chronological Overview of the Establishment of the Dahlem Institutes

1911 Kaiser Wilhelm Institute for Physical Chemistry and Electrochemistry (dedication ceremony 1912, renamed Fritz Haber Institute of the MPG in 1952)

Kaiser Wilhelm Institute for Chemistry (dedication ceremony, 1912)

1912 Kaiser Wilhelm Institute for Experimental Therapy (dedication ceremony, 1913) Kaiser Wilhelm Institute for Biology (dedication ceremony 1916)

1917 Kaiser Wilhelm Institute for Physics (in Dahlem since 1937, dedication ceremony 1938)

Kaiser Wilhelm Institute for Biochemistry (independent department of the Kaiser Wilhelm Institute for Experimental Therapy, associated from 1922–1925)

1920 Kaiser Wilhelm Institute for Fiber Chemistry (dedication ceremony 1922)
Kaiser Wilhelm Institute for Metals Research (in Dahlem since 1923)

1922 German Entomological Institute of the Kaiser Wilhelm Society (taken over)

1925 Kaiser Wilhelm Institute for Silicate Research (began working in 1926)
Kaiser Wilhelm Institute for Comparative Public Law and International Law (in Dahlem since 1947)

1926 Kaiser Wilhelm Institute for Anthropology, Human Genetics and Eugenics (dedication ceremony 1927),
Harnack House (dedication ceremony 1929)

1929 Kaiser Wilhelm / Max Planck Institute for Cell Physiology (began work in 1930)

1953 The Max Planck Society Research Unit for the History of Cultivated Plants (in Dahlem since 1943 as a department of the Kaiser Wilhelm Institute for Cultivated Plant Research)
Max Planck Institute for Comparative Hereditary Biology and Hereditary Pathology (founded 1941 as a department of the Kaiser Wilhelm Institute for Anthropology, Human Genetics and Eugenics)

1962 Research Unit for Tissue Breeding in the Max Planck Society (in Dahlem since 1943 as department for tissue breeding previously at the Kaiser Wilhelm Institute for Biochemistry)

1963 Max Planck Institute for Molecular Genetics (developed from the Max Planck Institute for Comparative Hereditary Biology and Hereditary Pathology, in new quarters since 1969/70, dedication ceremony 1971)
Institute for Human Development and Education of the Max Planck Society (since 1964 in the neighboring district of Wilmersdorf, dedication ceremony for the new building 1974)

1970 Vennesland Research Unit of the Max Planck Society

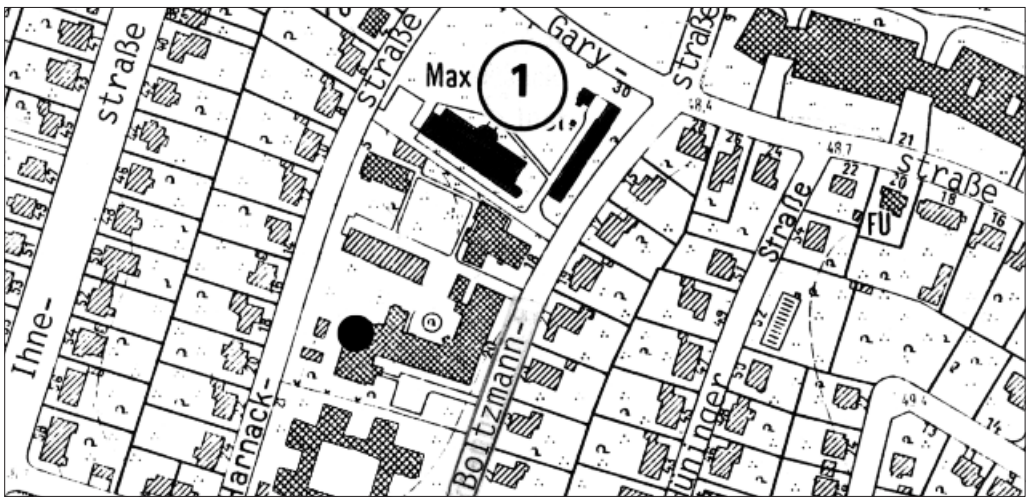
1973 (Library and) Archives (for the History) of the Max Planck Society (dedication ceremony 1978)

1986 Common Computer Center for the Fritz Haber Institute and the Max Planck Institute for Molecular Genetics, today Joint Network Center (GNZ) of the Berlin-Brandenburg Max-Planck Institutions at the Fritz-Haber-Institut der MPG e.V.

1993 Max Planck Institute for the History of Science (since 1994 in Berlin-Mitte, since 2006 in an own building in Dahlem)

1. Kaiser Wilhelm / Max Planck Institute for Cell Physiology / Archives of the Max Planck Society

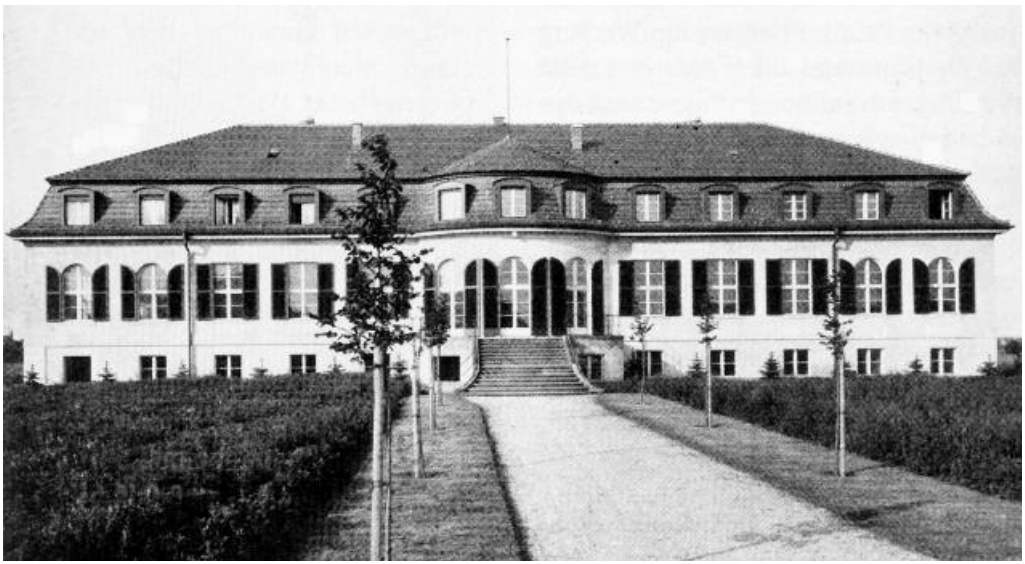
The starting point for an approximately two-hour walk through the history of the institutes of the Kaiser Wilhelm / Max Planck Society in Berlin-Dahlem begins at the Otto Warburg Building at Boltzmannstraße 14, not far from the subway (Thielallee Station, Faradayweg exit). This building embodies the typical "classical one-man institute" (Reimar Lüst) of the Kaiser Wilhelm Society, which following the "Harnack Principle" was "built around" an exceptional scholar. Today it houses the central archives of the Kaiser Wilhelm / Max Planck Society, whose unique library makes it particularly well suited for preparing or "debriefing" a tour of the institute.
In the garden of the Otto Warburg Building, at the end of a path lined with linden trees, there stands a larger than life statue of the Nobel Prize winner for Chemistry Emil Fischer (1852–1919), which Otto Warburg (1883–1970) commissioned in honor of his mentor. The statue was sculpted by Richard Scheibe as a replica of the sandstone sculpture from Fritz Klimsch (1921) which had previously stood at Luisenplatz (today Robert-Koch-Platz) in Berlin-Mitte. The former Kaiser Wilhelm Institute for Physics (see there) "Tower of Lightning" on the neighboring piece of property has belonged to the Archives since 1998 and has been converted to an archive.
Warburg's rapid successes after being named head of the physiological department in the



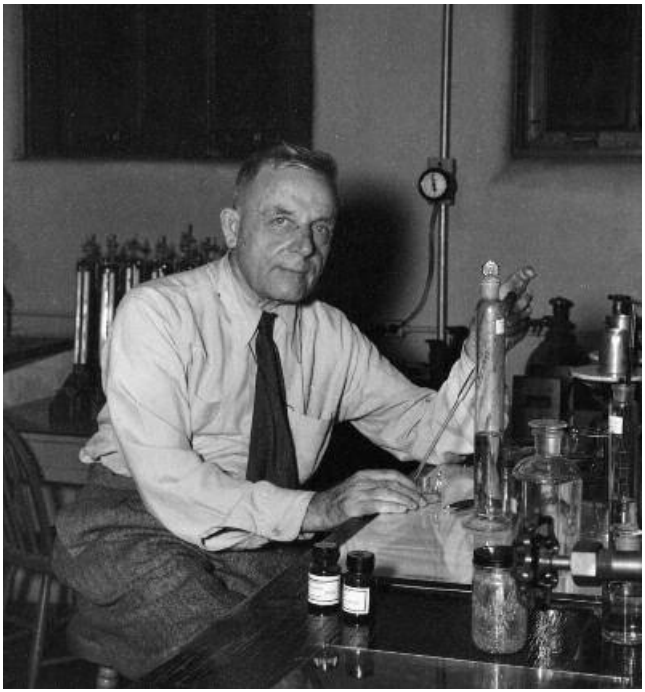
Kaiser Wilhelm Institute for Biology in 1914 (see that section) were for the most part the result of physical and chemical measuring techniques (manometry, spectrophotometry, among others) which he either developed or improved, and their application in cell physiological experiments. Among other fields Warburg worked in the areas of photosynthesis and respiration, though he became famous for the discovery of the zymotic metabolism of the cancer cell. While on a visit to Baltimore, Maryland in 1929, the Rockefeller Foundation offered to fund all of Warburg's work, whereupon he asked for the construction of not one, but two institutes, namely a smaller one for cell physiology and a larger one for (radiation) physics in the framework of the Kaiser Wilhelm Society. While the Physics Institute could not be completed until 1936, he was able to move into "his" **Kaiser Wilhelm Institute for Cell Physiology** on Garystraße between Harnackstraße and Boltzmannstraße by the end of 1930. The building was designed in the style of a country mansion located in Groß Kreutz near Werder and constructed by Carl Sattler and Wilhelm Heising in six months. Because the equipment and running costs were funded by the Richard Gradenwitz Foundation, the new institute, the directorship of which Warburg received in July 1930, was called the "Richard Gradenwitz Building". The following year Warburg was awarded the Nobel Prize for the discovery of the cytochrome oxydasis. His earlier hypothesis that iron serves as a catalyst in the cell oxidation process had been con-

10. Manor house Groß Kreutz bei Werder, front view (built 1765–1767)

firmed. Ten years later, Warburg and Walter Christians found that the iron-free, so-called yellow ferment in yeast also serves oxidation, but takes hydrogen from organic substances. By means of crystallization he was able to obtain luminoflavin (methylized alloxazin) as a derivate of the enzyme. In addition, Warburg succeeded in defining the crystalline structure of nine cymotic enzymes, including the isolation of a pure coenzyme, in whose fractions he identified the heretofore unknown nicotinamide as catalytically active group. He was then soon able to isolate a second nicotinamide-containing coenzyme (nowadays known as NAP and NADP). The pure depiction of the cymotic enzymes and coenzymes as reagents rapidly gained in importance in modern clinical biochemistry.
Warburg preferred technicians as assistants, even if prominent scientists later worked with him, e.g. the Nobel Prize winners Sir Hans Krebs (1953) and Hugo Theorell (1955).
Warburg's position as director during the "Third Reich" was not without controversy. Being a "first-degree Jewish crossbreed" he was in considerable danger and repeatedly denounced. The intervention of influential persons (amongst others in the Reich's Chancellery, who were responding to Adolf Hitler's fear of cancer) was repeatedly required to save the cancer research specialist. It was they who made it possible for him to continue his work after 1942 in Schloß Seehaus near Liebenberg in the Uckermark (Henning, 1987) where the institute was moved due to the bombing of Berlin. It was not possible to



11. Kaiser Wilhelm Institute for Cell Physiology, ca. 1931



12. Otto Warburg in laboratory, after 1930

award him a second Nobel Prize in 1944 due to Hitler's ban on accepting Nobel Prizes and the fact that the committee did not wish to make Warburg's situation even more difficult. The operations in the institute in Liebenberg came to a halt in 1945 when the Red Army took it over and dismantled the equipment. Warburg had to withdraw to his private residence in Dahlem (Garystraße 18), where he prepared publications and lecture tours abroad, as his Kaiser Wilhelm Institute had been requisitioned by the Americans and was used as the "Berlin High Command" between the years 1945 and 1948. The provisionary operations in the "yellow House" (Garystraße 9) which was torn down in the meantime could only be maintained on a transient basis.

Warburg rejected excellent offers to continue his work in the United States and in May 1950 his institute was reopened in a dedication ceremony led by the US military commander General Maxwell D. Taylor in the framework of the German Research Academy. Three years later it was integrated into the Max Planck Society (July 1953). Warburg was named director "for life". His former student and colleague Dean Burk (1904–1988) from

13. Emil Fischer monument, dedicated 1952

14. Emil Fischer monument (replica) at Robert-Koch-Platz

Bethesda, Maryland / USA was named External Scientific Member of the institute in 1954.

After the Second World War, Warburg tended to extreme interpretations of his experiments in the fields of photosynthesis and cancer research. These were, however, both methodologically productive (breeding of cancer cells in test tubes) and scientifically relevant as demonstrated by his presentation on the "Partial anaerobiosis of cancer cells and the effect of X-rays on cancer cells," made on the occasion of the celebration of the 100th convention of the Society of German Researchers and Physicians in Wiesbaden. At the age of 83, he considered retiring from his position as director of his institute and in 1966 proposed that the Norwegian Birgit Vennesland (1913–2001) from Chicago be named his successor (Scientific Member 1967). This proved to be only a temporary solution. By the time Warburg died in office in 1970, the "tailor-made" institute had lost its meaning, so that Feodor Lynen (1911–1979) of the Max Planck Institute for Cellchemistry in Munich temporarily filled the post until 1972 to complete the final research projects. A Berliner

Gedenktafel (Berlin Memorial Plaque) to the right of the entrance to the building commemorates Otto Warburg.

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In 1973 the Administrative Council of the Max Planck Society decided to rename the "Richard Gradenwitz Building" the "Otto Warburg Building" and at the proposal of President Reimar Lüst to establish a central archive at the original site of the Kaiser Wilhelm Society in Berlin Dahlem. After the building was renovated for the purposes of the archives, Rolf Neuhaus (1925–1991), the founding director of the Library and Archives for the History of the Max Planck Society in 1975 began with the collection and compilation of the files in Berlin. This was the first time that they had been secured, catalogued and studied at a single location. The dedication ceremony took place in March 1978 with a speech by the Nobel Laureate Sir Hans Krebs (1900–1981) about his teacher Otto Warburg. In 1984 Neuhaus, who was ill, stepped down as director, and Eckart Henning took his place, followed by Lorenz F. Beck in 2006. In 1986, it was decided to simplify the name, making it the "Archives for the History of the Max Planck Society", again 2006 as "Archives of the Max Planck Society". The "Chronicle of the History of the Kaiser Wilhelm Society" in 1988 by E. Henning and M. Kazemi is the first volume of 20 in the series "Publications

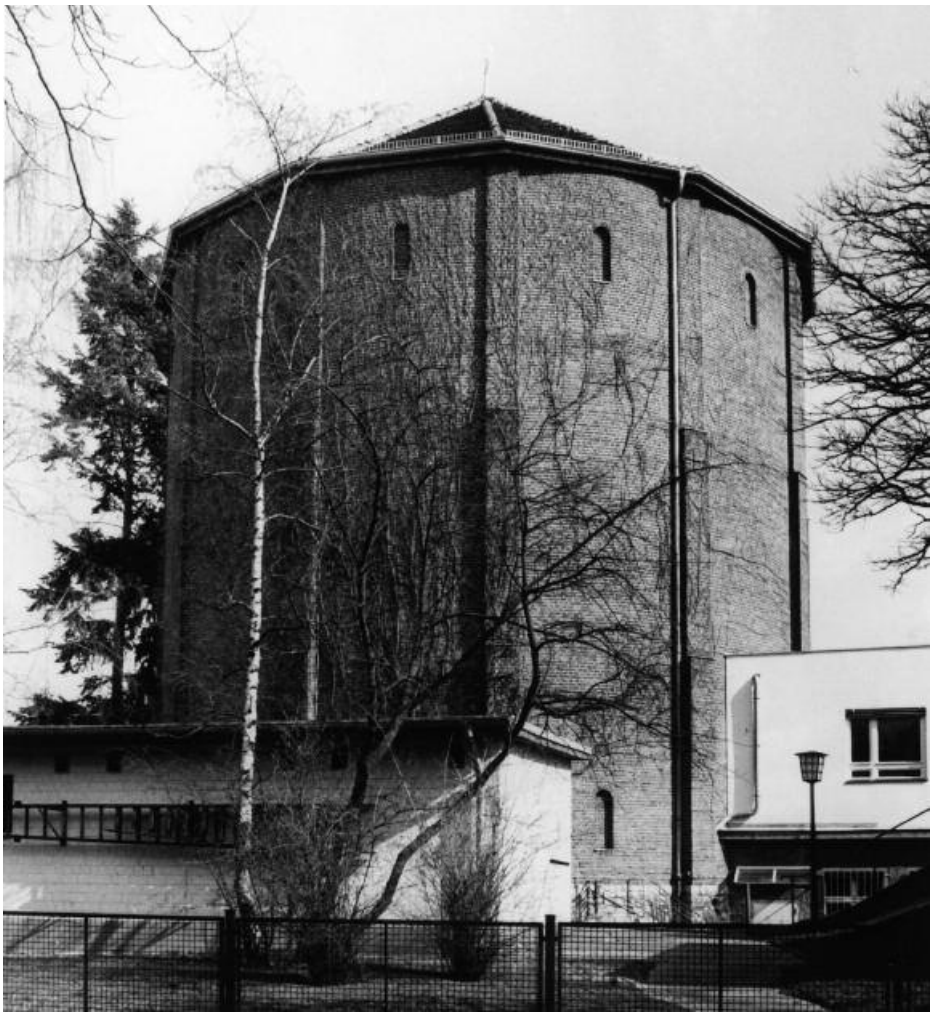
15. Otto Warburg Building (southern side) with entrance to the Archives

from the Archives (for the History) of the Max Planck Society" and at the same time is a guide to the archives with a list of the holdings. The archives are subdivided into 10 departments: I. Kaiser Wilhelm Society files (historical archives), II. Max Planck Society files, III. Material from members, leading employees, and friends of the Kaiser Wilhelm Society / Max Planck Society, IV. Maps and plans, V. Collections, VI. Pictures, VII. Film and sound archives, VIII. Reproductions, IX. Documentation on the history of the Kaiser Wilhelm Society / Max Planck Society and their members, X. References to other archives. A description of these holdings can be found in the "Guide to the holdings of the Archives for the History of the Max Planck Society" by Christel Wegeleben („Veröffentlichungen ...", Vol. 9, 1997), in the meantime this can also be accessed online at the Archives' website.

The archives house important material regarding the history of the Kaiser Wilhelm Society /

16. Reading Room of the Archives of the Max Planck Society with a painting of Robert Koch (by Eugen Spiro)

Max Planck Society since its founding in 1911 or re-founding in 1946/48. In the framework of this task it takes over, amongst other things, old records from central organizations currently within the Society, as well as from those institutes, research offices or departments, which were discontinued. The main focus of the archives' activity is the maintenance of more than 200 archives from leading scientists (13 of them Nobel Prize-winners),



17. "Tower of Lightning" (repository)

18. Sorting area for new acquisitions in the archive tower

who worked in the Kaiser Wilhelm Society / Max Planck Society. The library also collects literature on the general history of science in the 20th century. To accommodate the holdings, which have grown to just about 4 km in length, the above-mentioned "Tower of Lightning" was redone in 1998/99 as an archive tower (pg. 183). The guest apartments located in the top floor of the Otto Warburg Building will be converted into archiving space beginning in the end of 2009.

The documents are available for researchers in the reading room. This room was formerly Otto Warburg's library and study and is decorated with paintings by Eugen Spiro in 1930 of Warburg's "idols" – Louis Pasteur, Paul Ehrlich and Robert Koch. The "Dahlemer Archivgespräche", initiated in 1994, are held here. To this day there have been more than 75 (2009) science-history lectures, which have been published under the same title (vol. 1ff., 1996ff.).

The Max Planck Institute for the History of Science, founded in 1993, commenced its work in March 1994 in an apartment of the Otto Warburg House, before it moved to rented rooms in the embassy of the Czech Republic in Berlin-Mitte (Wilhelmstraße 44).

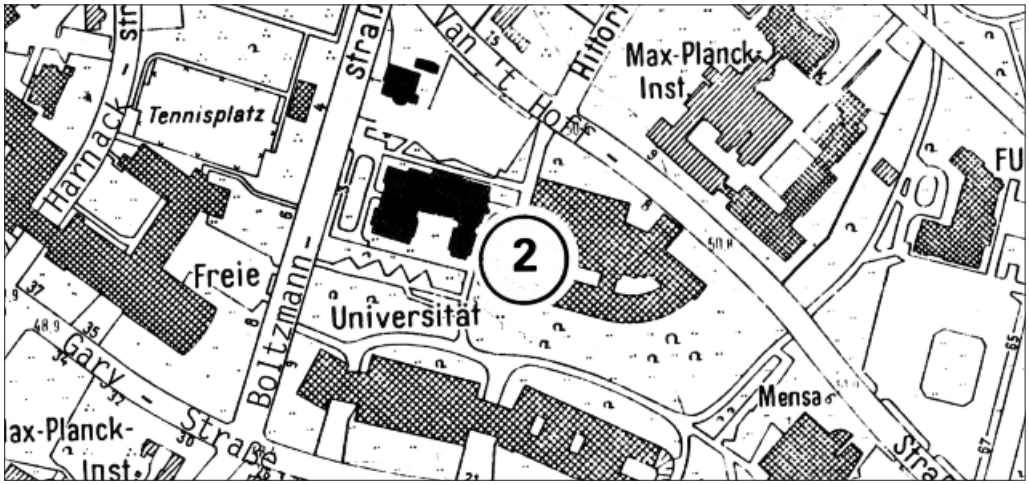
2. Kaiser Wilhelm Institute for Biology / Kaiser Wilhelm / Max Planck Institute for Comparative Public Law and International Law

From the Otto Warburg House the tour leads down Boltzmannstraße to the left, across the busy Garystraße. On the left is a building complex constructed in the 50s using funds from the Ford Foundation. This complex includes and the library and the main auditorium with further lecture halls of the Free University of Berlin, recently redone along with the landscaping. This piece of property, which stretches to Harnackstraße, previously served as experimental fields for the Kaiser Wilhelm Institute for Biology. Before that it had been intended as the building site for the Kaiser Wilhelm Institutes for Brain Research, for Physiology and for Biochemistry. These plans were canceled as a result of the post-war inflation.

On the opposite side of Boltzmann/Garystraße, where the building for the lecture halls for the Economics Department is located today, there was previously the duck pond of the Kaiser Wilhelm Institute for Biology. Here, in 1938, a swimming pool was built with private funds for use by employees of the Kaiser Wilhelm Society and their families, especially enjoyed by the children.

Next to the Economics Department begins the Free University campus with its monument "Perspektiven" by Volker Bartsch, erected in 2007 to commemorate the "Students of the Free University and the German College for Politics who have lost their lives for liberty", behind which a large building can be seen which is slightly set back from the street (Boltzmannstraße 3). Today this building houses among others the three special libraries for German and European Economic, Competition and Regulation Law, for Legal Sociology and Legal Reality as well as for Roman Legal History of the Department of Law. Originally, however, it was constructed for the Kaiser Wilhelm Institute for Biology. The institute's experimental fields, greenhouses (one of them today the ‚Basar') and buildings once covered the entire area between Gary-, Boltzmann- and Van't Hoff-Straße up to where the university refectory I is now located (see illustrations pg. 36).

Across from the institute (Boltzmannstraße 4) there is a smaller building which was constructed in 1927 to house the building department and the construction planning archives of the Kaiser Wilhelm Society. Today, this building, which was for sometime called the Paul Tillich Building is used by the Berlin Consortium for German Studies of the Free University.



When the first two chemical Kaiser Wilhelm institutes were founded, there were no difficulties in choosing directors or the areas of specialization. By contrast, the Kaiser Wilhelm Society had no concrete idea for the biological institutes although, or perhaps because of the fact that, there were a number of very different ideas in this regard. For this reason the Prussian Minister of Culture August von Trott zu Solz (1855–1938) set up a committee in January 1912 which was charged with the task of reviewing the proposals for establishing the biological research institutes. Beside representatives of the ministries and the Society, it consisted of 27 specialists. It recommended creating institutes in the fields of genetics and theory of evolution, experimental physiology, protista and bacteria, brain research, experimental psychology and therapy, many of which were founded in subsequent years. Developmental mechanics and genetics were favored as the main fields and negotiations were begun with the Würzburg zoologist Theodor Boveri (1862–1915) as possible director. He presented his ideas on the content and some of the personnel of a "Biological Institute of the Kaiser Wilhelm Society". In his opinion, the emphasis of the institute's work was to be placed on experimental investigations and the rest should be left to the researchers who accepted positions in the various fields. Beside genetic and developmental theory, he considered protista theory to be of central importance because he expected that the results from studies on protista would supply insights into the physiology of superior plants and animals. In addition, he proposed that the institute be associated with the Berlin University, where the director would also have a professorship.

19. Swimming pool of the Kaiser Wilhelm Society in Boltzmannstraße at the corner of Garystraße, ca. 1940

Surprisingly, due to poor health, Boveri turned down the directorship in the spring of 1913. He did, however, recommend the plant geneticist Carl Erich Correns (1864–1933) from Münster, one of the rediscoverers of Mendel's laws of genetics, who accepted the call in October 1914. At the same time zoologist, and Boveri student, Hans Spemann (1869–1941) from Rostock was named Vice director. Both were also named honorary professors at the Berlin University.

A 3.7 hectare piece of land next to the other Kaiser Wilhelm Institutes was chosen for the **Kaiser Wilhelm Institute for Biology**. The institute's buildings, the director's residence and the gardener's house were planned for the northern section, while the greater part of the area was planned for the greenhouses, experimental fields and animal pens and runs. Ernst Eberhard von Ihne, who had already built the other Dahlem institutes, designed the new buildings in accordance with the researchers' wishes, while Max Guth once again took on the responsibility for construction and interior equipment. Although the First World War commenced only a quarter of a year after construction began, the institute was able to begin working in its new domicile in mid-April 1915, after only one year of construction time. Correns had already moved into the director's residence next to the institute in the fall of 1914. This, the fourth Dahlem Kaiser Wilhelm Institute, was, as a result of the

20. Building department of the Kaiser Wilhelm Society, Boltzmannstraße 4

war, not opened in an official ceremony attended by the Kaiser, but in a ceremony during the third General Assembly of the Kaiser Wilhelm Society.

In the beginning, the Kaiser Wilhelm Institute for Biology consisted of five departments, one for genetic biology and plant biology (Correns), development mechanics of animals (Spemann), genetics and animal biology (Richard Goldschmidt, 1878–1958), protista (Max Hartmann, 1876–1962) and physiology (Otto Warburg, 1883–1970). Goldschmidt, Hartmann and Warburg were named – at Boveri's recommendation – Scientific Member at the institute in 1914. Goldschmidt was, however, unable to take up his work until 1919, due to his internment in the US, and Warburg could first begin in 1918, due to military service.

Correns dealt with questions concerning the sexual determination and the non-Mendel genetics in plants, chlorophyll formation and other leaf pigments as well as variegation. His research team consisted of Hans Kappert, Flora Lilienfeld, his later successor Fritz von Wettstein, Eduard Schratz, Eckhart Kuhn and Edgar Knapp (later Director of the Max-Planck-Institute for Plant Genetics).

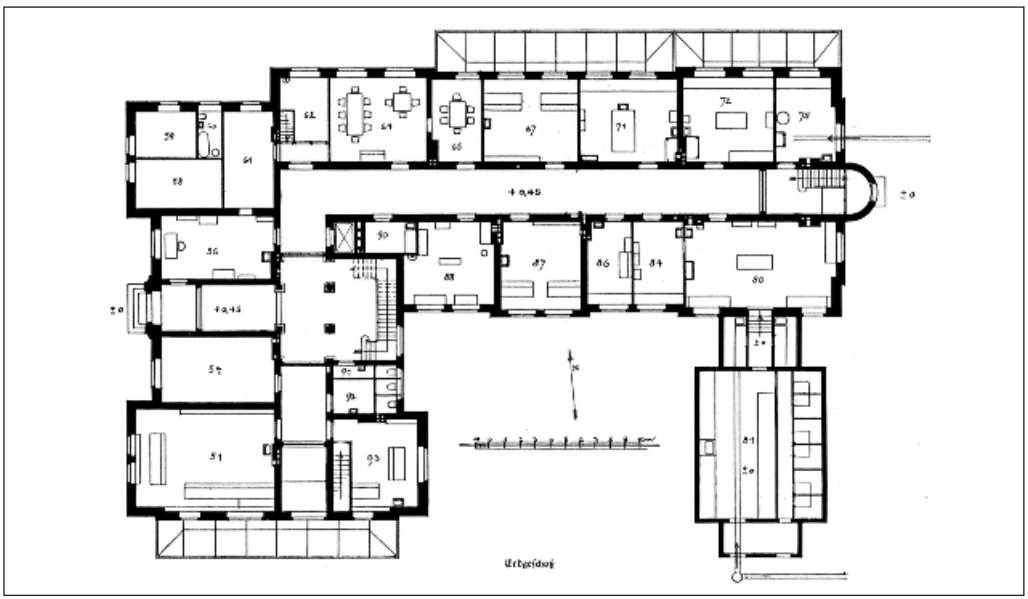
Spemann continued his investigations in the field of developmental mechanics, a field of study which had been founded by Wilhelm Roux and Hans Driesch. Having earned a

Kaiser Wilhelm Institute for Biology

21. Main entrance – west side, 1983

22. North side with director's residence, 1915

23. South side with greenhouses and experimental fields, 1915



24. Floor plan of the ground floor

25a–25b. Carl Erich Correns at work (on the right with his wife)

reputation for his work with construction experiments (Schnürversuche) in salamander eggs, in Dahlem he developed the transplantation methods for amphibian embryos, through which he discovered the organiser, namely those region of the embryo where the development is determined (he was awarded the Nobel Prize for this work in 1935).
Hartmann's department dealt with three areas: the physiology of reproduction, fertilization and sexuality of plant and animal protista and lower invertebrates, the cytological basis of reproduction and fertilization processes. They also tackled questions dealing with genetics and evolution and therefore the connections between developmental physiological problems in protista and lower animals. Hartmann and his colleagues (Karl Bělař, Viktor Jolos, Lothar Geitler, Joachim Hämmerling, among others) were able to prove that animal and plant protista reproduce agamically by means of growth and division as well as sexually by means of fertilization. The cytological questions of nuclear division, the processes involved in nuclear succession was primarily the work of Bělař, and, following his accidental death in 1931, Björn Föyn, Hans Bauer, Klaus Pätau, Walther Huth, Clifford Mortimer and Fabius Gross. Viktor Jollos investigated variability and mutation in animal protista and lower animals, Joachim Hämmerling (1901–1980, later the German Director of the

German-Italian Institute for Marine Biology, Rovigno/Istria) developed his transplantation experiments for formation of the monocellular green alga Acetabularia.
Richard Goldschmidt's work was continued during the First World War by his assistant Jakob Seiler. His department dealt with the subjects of sexual differentiation, the geographic variation in its relationship to evolutionary problems and the influence of genes on the development of the individual. Along with Seiler Goldschmidt's staff consisted of Fritz Süffert, Günther Just, Curt Stern, Karl Henke and Mathilde Hertz (daughter of the physicist Heinrich Hertz), who investigated the visual perception of animals. More than his colleagues, Goldschmidt maintained international contacts. His department constantly had foreign visitors, especially from Japan.
Otto Warburg first worked on questions dealing with photosynthesis, especially on the utility of the transformation of light into chemical energy. Later his work dealt with the oxidation and fermentation metabolism of tumors and with oxygen-carrying ferment (Nobel Prize 1931). Among others Warburg's staff consisted of Fritz Negelein, Hans A. Krebs (Nobel Prize 1953) and Hugo Theorell (Nobel Prize 1955).
Until 1919 another external department, development physiology, in Heidelberg was associated with the institute. This department was under the directorship of zoologist Curt Herbst (1866–1946) until he took on a professorship at the University of Heidelberg in 1919. He was named a External Scientific Member in 1927.
Not only the work of Goldschmidt and Warburg was impaired by the First World War. Fritz Haber's institute, which was placed under the Ministry of War also used rooms in the Kaiser Wilhelm Institute for Biology. The ministry built barracks across from the institute which, after the chemical weapons researchers left, were used for some time to house the Freikorps Lüttwitz (nationalist death squads used by the government to battle left-wing revolutionaries in Berlin in 1919), which kept things chaotic for some time.
In the spring of 1918 a research center for bee biology and apiculture was associated with the Institute. This center was led by Ludwig Armbruster (1886–1973), who became a Scientific Member of the institute in May, under the supervision of Max Hartmann. Because the cooperation proved to be very difficult, the research center was transferred to the Agricultural College of Berlin in 1923.
A guest department was established for Dr. Agnes Bluhm (1862–1943) in 1919, who investigated the influence of toxins, especially alcohol on the genes of mice. She worked closely with the German racial hygiene movement led by Alfred Ploetz and dealt with social-biological questions. The Hungarian Tibor Péterfi (1883–1953) was a guest in Goldschmidt's department from 1921–1935 working in the field of experimental cell research. He developed a micromanipulator and other microsurgical methods in the institute.

Hans Spemann left the institute in April 1919 to accept a professorship at the University of Freiburg im Breisgau. He was named a External Scientific Member in 1927. His position remained vacant until the end of 1923 when his student Otto Mangold (1891–1962) took it over. He then continued the development physiologic work with, among others, Johannes Holtfreter. The position of vice director was given to Richard Goldschmidt in 1921.

In 1924, a further department was added to the Kaiser Wilhelm Institute for Biology – general physiology, which was set up for the biochemist Otto Meyerhof (1884–1951) from Kiel. Here he continued his studies on the physiology of muscle, especially for anaerobic carbohydrate division (lactic acid formation and alcoholic fermentation) for which he won the Nobel Prize in 1922, as well as other problems of the carbohydrate metabolism. Among his staff were Karl Lohmann, Hermann Blaschko, David Nachmansohn, Fritz Lipmann (Nobel Prize 1953) and Severo Ochoa (Nobel Prize 1959). In 1929 Meyerhof and his department moved to the new Kaiser Wilhelm Institute for Medical Research in Heidelberg as Director of the (Sub-) Institute for Physiology.

Warburg's department "soon outgrew the space and the potential which the institute could offer it" and his work "took on a magnitude which could only be met by its own, large institute" (KWG-Handbuch 1936). The Rockefeller Foundation established for him a Kaiser Wilhelm Institute for Cell Physiology on a nearby piece of property (see above). His department moved in at the end of 1930.

From 1926 to 1932 a guest department (tissue breeding) was associated with Warburg's department of the Kaiser Wilhelm Institute for Biology. This department was led by Albert Fischer (1891–1956) from Copenhagen. It was, however, located in the Kaiser Wilhelm Institute for Experimental Therapy from which it also received its funding.

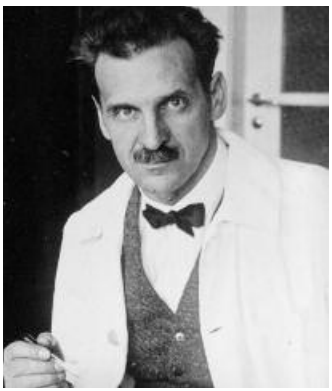
When the first Director of the Kaiser Wilhelm Institute for Biology Carl Erich Correns retired in 1932 it was not possible to find a suitable successor and so he retained this position in an interim capacity, until his soon death on February 14, 1933. The vice director, Richard Goldschmidt, was charged with the interim directorship, but because he was Jewish, he was continually hindered in fulfilling his duties. In May 1933 Max Hartmann took office with Otto Mangold as his deputy. Mangold was, however, transferred to the University of Erlangen in September 1933.

After some delay, Fritz von Wettstein (actually Friedrich Wettstein, Knight of Westersheim, 1895–1945) from Munich, son of the Viennese botanist Richard v. Wettstein, a student of Correns and Scientific Member in since 1931, was named director and head of the department for experimental botany in October 1934. Following up on his work on heteroploidy and polyploidy, plasmatic genetics and alternation of generation in liverwort carried out in

26. Ludwig Armbruster

27. Hans Bauer

28. Richard Goldschmidt



29. Max Hartmann

30. Alfred Kühn

31. Otto Mangold

32. Georg Melchers

33. Otto Meyerhof

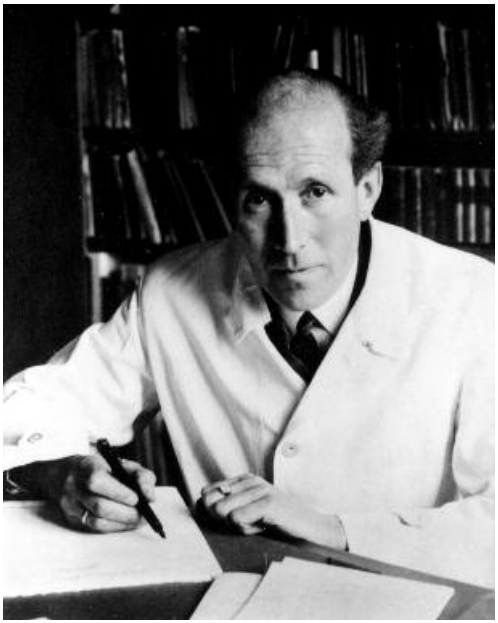
34. Hans Spemann

the institute 1919/25, von Wettstein worked on the influence of genes – especially in polyploidy – on the physiology and development of plants. Among his staff were Hans Gaffron (who also worked with Warburg), Georg Melchers (1906–1997, director and Scientific Member of Kaiser Wilhelm / Max Planck Institute for Biology 1946–1976), Karl Pirschle, Joseph Straub (1911–1987, Director of the Max Planck Institute for Plant Breeding Research 1961–1979) and Hans Stubbe (1902–1989, as of 1943 Director of the Kaiser Wilhelm Institute for Cultivated Plant Research) who was dismissed from the Kaiser Wilhelm Institute for Plant Breeding Research in 1936.

Things quieted down for a while in the institute after von Wettstein took office. But at the end of 1935 Richard Goldschmidt was forced into retirement by the Nazi racial laws. He then took a position at the University of California in Berkeley. His assistant Karl Henke temporarily headed the department until 1937 when his professor, zoologist Alfred Kühn (1885–1968) from Göttingen, took over the department and the position of vice director. Henke in turn took on Kühn's professorship in Göttingen. Kühn (along with Victor Schwartz, Hans Piepho, Erich Becker and Ernst Plagge, Goldschmidt's staff member Georg Gottschewski and visiting scholar Fritz Süffert) dealt with questions of genetic-developmental physiology, especially with the development of a general model of genetic behavior and with the genetic influence on the formation of morphological patterns, among others the formation of pigments in the eyes of insects and the pattern of butterfly wings. A close collaboration with the Director of the Kaiser Wilhelm Institute for Biochemistry, Adolf Butenandt (1903–1995) developed out of this.

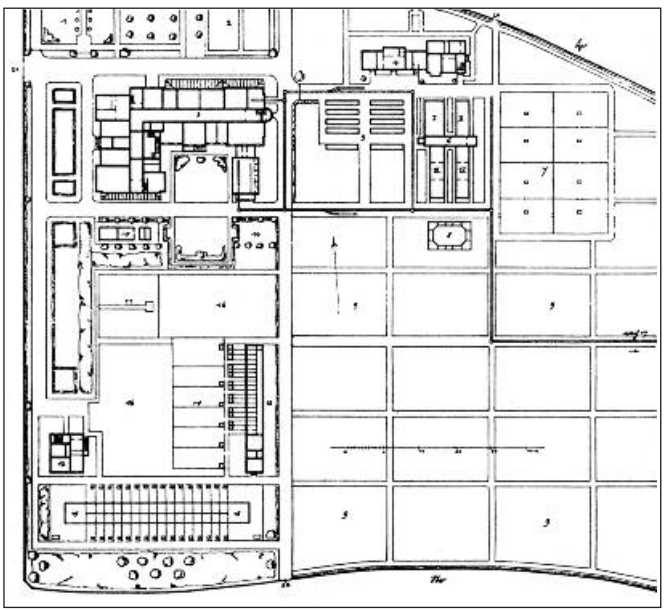
In 1937 von Wettstein, Kühn and Butenandt established a research group for the advancement of virology with the financial support of I.G. Farbenindustrie AG (Heinrich Hörlein). In April 1941, the working groups for botany (Georg Melchers), chemistry (Gerhard Schramm), zoology (Rolf Danneel) and the entomological branch in Oppau (Gernot Bergold) combined to become the "The Virology Unit of Kaiser Wilhelm Institutes for Biochemistry and Biology". After the war this became the Max Planck Institute for Virology in Tübingen and was renamed in 1984 as the Max Planck Institute for Developmental Biology.

Max Hartmann withdrew more and more from the institute as of 1938. In 1940 he took a sabbatical and went to the Institute for Marine Research and Marine Agriculture of the Kaiser Wilhelm Society in Langenargen on Lake Constance. Then he helped establish the German-Greek Institute for Biology of the Kaiser Wilhelm Society in Piraeus, heading it from Germany as director as of April 1942 (represented by his assistant Otto Schartau in Piraeus). Two years later the institute was closed as a result of the turning tides of the war. Hartmann's assistant Hans Bauer (1904–1988) served as the interim head of the depart-



35. Fritz v. Wettstein

36. Staircase on the east side



37. Layout of Kaiser Wilhelm Institute for Biology

ment at the Kaiser Wilhelm Institute for Biology and was named a Scientific Member in 1942.
Due to the war, the departments of the Kaiser Wilhelm Institute for Biology were evacuated starting in the summer of 1943. Bauer's and Kühn's departments went to Hechingen. Parts of Wettstein's department remained in Dahlem, a part was evacuated to Hechingen, a research center for mycology went to Seefeld near Munich while he himself went to Trins/Tyrolia, where he died on February 12, 1945. The institute was reunited in Tübingen after the war. The virology unit was relocated to Tübingen with a part of the Kaiser Wilhelm Institute for Biochemistry in August 1943, Danneel's department to Göttingen. Elisabeth Schiemann, with her department for the history of cultivated plants, a part of the Kaiser Wilhelm Institute for Cultivated Plant Research, was temporarily housed in the empty building in Dahlem until July 1945. The building has been used by the Free University of Berlin since November 15, 1948.

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In February 1947, the sections of the library from the **Kaiser Wilhelm Institute for Comparative Public Law and International Law** which could be saved from those stored outside Berlin (after having been stored in the Kaiser Wilhelm Institute for Chemistry and Electrochemistry) were brought back and placed in the director's residence of the Kaiser Wilhelm Institute for Biology (Boltzmannstraße 1). The institute itself was relocated here after having been temporarily located in the home of its first director, Viktor Bruns, in Berlin-Zehlendorf, where it had been moved after the bombing of the Berlin Castle on February 3, 1945. Karl von Lewinski (1873–1951) served as interim director of the parts of the institute remaining in Berlin after Director Carl Bilfinger (1879–1958), who was in Heidelberg, retired from office in the summer of 1946. When von Lewinski emigrated to the USA in 1949 Erich Kraske (1881–1954) took over the position, serving until his death 1954. In June of 1947 the institute, along with the other Berlin Kaiser Wilhelm Institutes was transferred to the German Research Academy. After the Academy was dissolved on July 1, 1953 it became the Berlin branch of the Max Planck Institute for Comparative Public Law and International Law, which had been established in Heidelberg in 1949. As of September 1955, under the leadership of Fritz Münch (1906–1995, Scientific Member since June 1956) the branch has dealt with Law Regulating Compensation for War-induced Losses. In Summer 1960, however, it relocated permanently to Heidelberg.

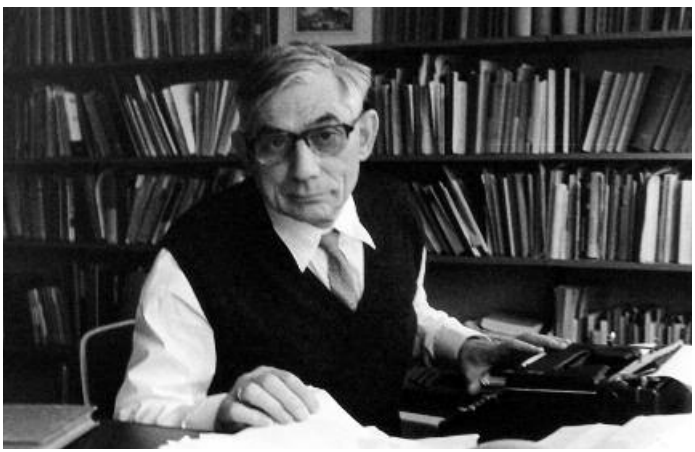
38. Students in front of the Kaiser Wilhelm Institute for Biology as the first main building of the Free University, 1949

The property and buildings of the Kaiser Wilhelm Institute for Biology, including its director's residence, became the property of the State of Berlin on July 5, 1957 and have been used since then by the Free University, the Villa by the Institute for German Legal History and the Chair for Civil Law of the Department of Law. The secondary buildings and experimental fields have long since given way to new buildings for the law and business schools, between which the university campus is located.

39. Director's residence of the Kaiser Wilhelm Institute for Biology, after World War II Berlin Office of the Kaiser Wilhelm / Max Planck Institute for Comparative Public Law and International Law

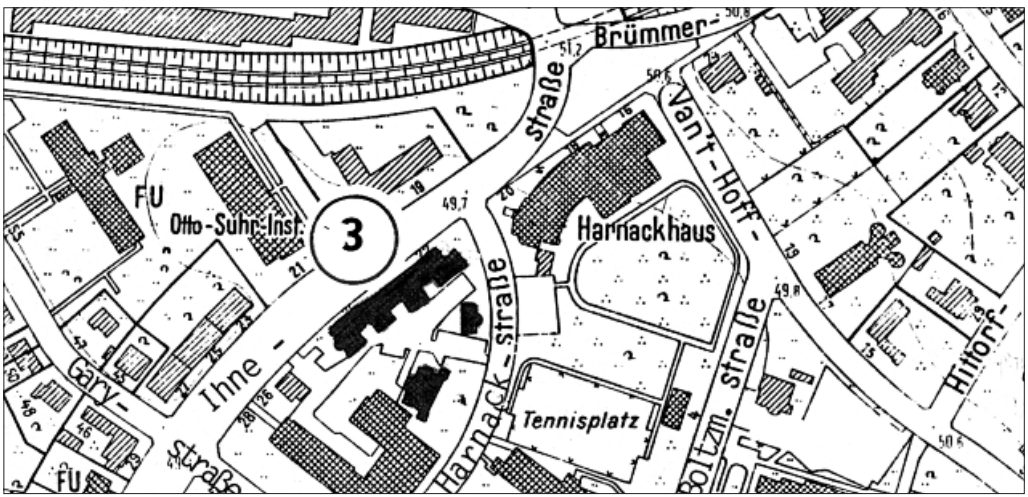
40a. Erich Kraske

40b. Fritz Münch



3. Kaiser Wilhelm Institute for Anthropology, Human Genetics and Eugenics

Across from Boltzmannstraße 3, a small path leads between the park and the tennis courts and the Henry Ford Building to Harnackstraße. Next to the towers of the University Library stands a two-story house, which today houses part of the administration of the Free University. Originally it had been constructed as the directors' residence for the Kaiser Wilhelm Institute for Anthropology, Human Genetics and Eugenics which was located behind it. To the right of the house is a single-story building, which also belonged to the institute and served as an animal stall and animal experiment room. Across the parking lot and to the left is the main entrance of the former institute (Ihnestraße 24), which is graced by a bust of the goddess Minerva created by Carl Ebbinghaus and which is the symbol of the Kaiser Wilhelm / Max Planck Society (the silent-film star Henny Porten is believed to have been the model for this sculpture).



In the 1920s physicians and geneticists, including Erwin Baur, Carl Erich Correns and Richard Goldschmidt, stepped up their efforts to found an institute which would address questions of anthropology, human genetics and eugenics. These fields had not yet been firmly established at the universities. The plan was taken up by the Kaiser Wilhelm Society

and in June 1926, its senate decided to establish a "Kaiser Wilhelm Institute for Anthropology, Human Genetics and Eugenics". Part of the reasoning behind this decision was that these scientific fields were being better cultivated in the USA, Sweden, France and England than they were in Germany, where only animal and plant genetics were represented. In addition, through the creation of a strictly scientific research institute, independent of political and other influences, it was hoped to "counteract insufficient and dilettantish experiments in these fields" (National Budgetary Plan, 1927). The anatomist Eugen Fischer of Freiburg (1874–1967) was appointed director. He led the anthropological department, while also serving as department head for the new Anthropology Department at the Berlin University. The well-known former Jesuit priest and biologist Hermann Muckermann (1877–1962) was chosen to lead the eugenics department.

The new institute sought to establish a close working relationship to the Kaiser Wilhelm Institute for Biology and the Institute for Hereditary Sciences at the Agricultural College in Berlin-Dahlem, and to promote cooperation with other government agencies, in particular the National Statistical Office. To these ends, Carl Sattler built a "stately three-story building graced with an exterior both simple and unadorned – though from line and form elegant" (Fischer, 1928) on land provided by the State of Prussia near the Kaiser Wilhelm Institute for Biology. The national government allocated 300,000 marks, Prussia supplied 100,000 marks, with the remaining 200,000 marks drawn from donations gathered largely by Muckermann. The gala opening took place on 15 September 1927 during the 5th International Congress on Hereditary Science, which was the very first scientific congress to be held in Germany which had been boycotted by the Entente since the First World War until then.

The **Kaiser Wilhelm Institute for Anthropology, Human Genetics and Eugenics**, as it came to be known, was, as its name suggests, divided into three departments. The Department for Anthropology (Fischer) was concerned with questions of classical anthropology such as the origin of humankind, its division into races and their distribution, as well as their physical and mental characterization. Alongside this, research was done on the "anthropology of the German people" using statistical data and genetic methods. It included hereditary pathological findings, and addressed questions of racial-biology. Baron Otmar von Verschuer (1896–1969) from Tübingen, director of the Department of Human Genetics, investigated the significance of hereditary factors on normal and pathological physical and mental characteristics. He carried out his research on fraternal and identical twins, in order to be able to clearly differentiate between hereditary factors and environmental influences. With the help of physicians and state offices he investigated several thousand Berlin twins, above all children, over an extended period. The results of both of the departments just

41. Main entrance (west side)

42. Back side (east side)

described were to form the basis for the work of the Department of Eugenics, led by Hermann Muckermann. This department was concerned "with all the causes that can lead to a change in the genetic disposition of a people ... and with the measures that are prompted by research and which must be carried out in order to improve the genetic health and strength of the race, as well as with the manner in which these measures be carried out. The work of this institute will culminate in the field of eugenics" (KWG Handbuch, 1928).

In the first years of its existence the institute developed into the center of human genetic research in Germany and secured a good reputation by virtue of its empirical basic research and the tuberculosis research in twins conducted by von Verschuer and Karl Diehl (1896–1969).

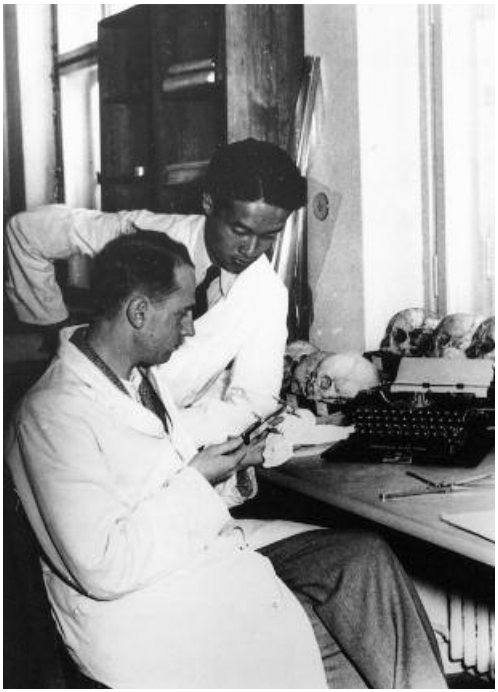
The assumption of power by the National Socialists in 1933 brought significant changes

43. Director's residence of the Kaiser Wilhelm Institute for Anthropology, in the background is the library of the Free University

to the institute. In his report in summer 1933, Fischer – who had just been elected Rector of the Berlin University against the wishes of the Nazis – stressed the part that his institute would play in the racial hygiene movement and in the preparation of eugenic legislation, especially the Law to Prevent Hereditarily Sick Offspring. He stated that "the institute is completely and wholly prepared to assume the tasks of the current government" (MPG Archives). The new regime immediately began to exert its influence on the institute. While Fischer succeeded in keeping Verschuer, who was considered too liberal (Müller-Hill, 1984), the co-founder of the institute, Hermann Muckermann, had to leave at the end of July, because – as the representative of a catholic-influenced position on genetic biology and eugenics – he was mistrusted by the Nazis. The directorship of his department (thereafter known as "Racial Hygiene") was assumed in November 1933 by Fritz Lenz (1887–1976), who was brought in from Munich. He was known above all for his co-authorship of the standard work on genetic science and racial hygiene used at the time, the "Fischer-Baur-Lenz". Lenz carried out – as Muckermann had before him – eugenic research on various occupations and population groups, especially concerning reproductive behavior and reduced birth rate. He also investigated cell damage resulting from X-ray radiation and alcohol. Together with Verschuer, Lenz was named a Scientific Member of the institute in June 1934.

Beyond the actual research activities, the many secondary activities undertaken on behalf of the National Socialist state began to assume an increasingly important role at the Kaiser Wilhelm Institute for Anthropology, Human Genetics and Eugenics. These were not just a manifestation of opportunism, but indeed reflected the conviction of most of the researchers, who believed that they might thereby come closer to achieving the racial hygienic goals they shared. Such activities included, above all, public presentations and lectures on genetic and racial hygiene for laymen in various occupations. In addition, courses were held for public health officials and "the expert testimony and opinion reports ... for health offices, courts of hereditary health and higher courts [paternity and racial-biological opinion reports], as well as consultative support in government efforts in racial science and population policy including legislation" (Fischer, 1937). As the facilities and budget of the institute were insufficient to meet these new tasks, the institute was significantly enlarged through extensions in 1935 and its operating budget was doubled within two years.

When Verschuer left the institute in April 1935 to assume a position at the University of Frankfurt am Main (soon thereafter he was named an External Scientific Member of the institute), his department was integrated into the other two departments. In its place Fischer founded a new Department for Hereditary Psychology, even the head of which, Kurt Gottschaldt (1902–1991), made no attempt to hide his communist sympathies from



44. Racial studies using skulls and molds of hands

45. X-rays of hands and fingers of identical twins

him. In 1938, a branch office for hereditary tuberculosis research was created for Karl Diehl in Beetz/Osthavelland and the significance of racial research was demonstrated by the establishment of a corresponding department led by Wolfgang Abel (1905–1997). Finally, in January 1941 a department for experimental genetic pathology was formed under Hans Nachtsheim (1890–1979), who continued experiments begun at the Agricultural College of Berlin on the genetic processes and environmental influences on hereditary diseases in rabbits. They were to serve as a model for human hereditary disease.

Eugen Fischer retired from his position as department head at the Berlin University and as director of his institute in October 1942 and moved back to Freiburg. His successor, Baron Otmar von Verschuer, had previously been an External Scientific Member of the institute. In the summer of 1943, as part of the general evacuation of the Kaiser Wilhelm Institutes, some portions of the Kaiser Wilhelm Institute for Anthropology, Human Genetics and

46. Eugen Fischer

47. Fritz Lenz

48. Otmar Frhr. v. Verschuer

Eugenics had to be relocated in outlying areas. Most of the staff, however, stayed on at the institute in Berlin-Dahlem until the beginning of 1945, when – with the exception of Nachtsheim's department – it was evacuated to Solz near Bebra beginning in mid-February. In April, Soviet occupation forces confiscated the institute building. The remaining institute worked in the director's residence, until American troops arriving in July claimed this building as well.

After the Second World War the Kaiser Wilhelm / Max Planck Society could not continue to support the work of the politically compromised institute. Only Nachtsheim's Department was brought into the new Society in 1953 as the Institute for Comparative Genetic Biology and Genetic Pathology (see pg. 137)

As a result of this decision, the Society turned the building over to the Free University. In 1988, at the initiative of students from the Political Science Department (Otto Suhr Institute), the Free University placed a much debated (3rd) commemorative plaque to the right of the entrance to serve as a reminder of the involvement of the Kaiser Wilhelm Institute for Anthropology, Human Genetics and Eugenics in the "Third Reich".

The President of the Max Planck Society Heinz A. Staab, on the occasion of the 75th anniversary of its founding in 1986, noted that unfortunately there were also scientists in the Kaiser Wilhelm Institute who misused their science "for political purposes harmful to humanity" and, using the Archives of the Max Planck Society, investigated whether there were any preparations in the neuro-scientific institutes of the society for which it was not

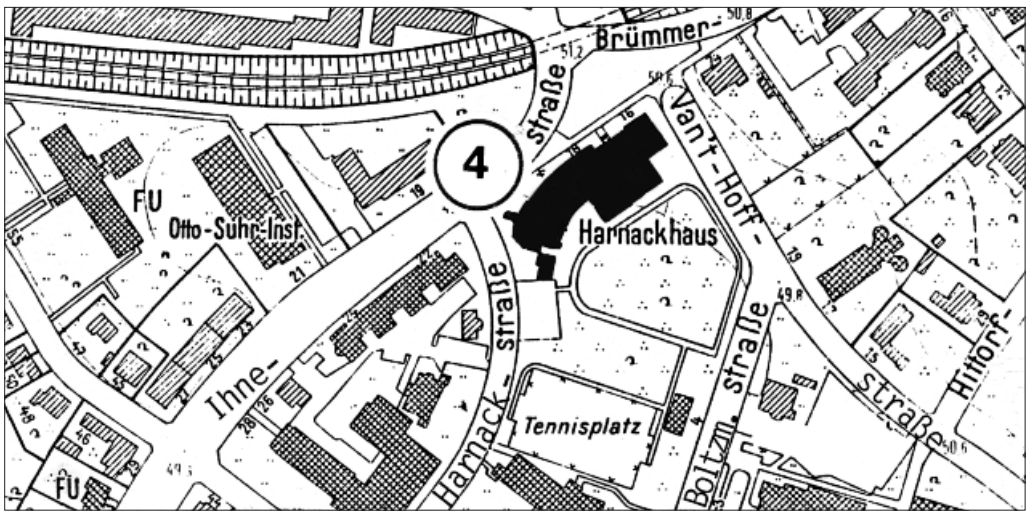
49. Plaque next to the institute's main entrance

possible to exclude that they stemmed from victims of euthanasia. These were interned in 1990 at the Munich Waldfriedhof and a memorial dedicated to the "Victims of Medical Abuse". On the occasion of a symposium on "Biomedical Sciences and Human Experimentation at Kaiser-Wilhelm Institutes – the Auschwitz Connection" – organized by the Max Planck Society in conjunction with its Presidential Commission "Kaiser Wilhelm Society in National Socialist Era" in Dahlem in June 2001 – which primarily investigated the involvement of the Kaiser Wilhelm Institute for Anthropology, Human Genetics and Eugenics, the President of the Max Planck Society, Hubert Markl, apologized in the presence of Auschwitz survivors "for the suffering inflicted upon the victims of these crimes in the name of science – to those who perished and have since passed away and to the ones who have survived". He emphasized that "utilizing human beings as laboratory animals can be specifically placed on biomedical science that was robbed of every moral boundary, a science whose racist theories do indeed not deserve to be called 'scientific', but which cannot deny that it is also to blame for the terrible consequences". Furthermore, he

warned all scientists "to never forget that there is no goal of research that can be viewed as so important and high-ranking that it justifies …completely disregarding another person's dignity or human rights against their will" (Biowissenschaften und Menschenversuche..., 2001).

4. Harnack House

Just a few meters from the Kaiser Wilhelm Institute for Anthropology, on the other side of Harnackstraße, is the Harnack House at Ihnestraße 16–20. Its name is chiseled into the front of the portico over the driveway and the words "HOERSAAL DER K.W.G." (Lecture Hall of the Kaiser Wilhelm Society) appear along its length.



Harnack championed the interdisciplinary nature of science, foreign study and exchange, took an early stand against "near-sighted patriots and politicians" (1905). Thus, as the President of the Kaiser Wilhelm Society during the Weimar Republic, he strove to overcome the war-related isolation of the German scientific community by inviting a guest from Copenhagen (Albert Fischer) for a three year stay in Berlin. In a January 1926 letter seeking support from the Foreign Minister Gustav Stresemann, Harnack emphasized the necessity of "making it possible for foreign researchers to work with German researchers by establishing facilities for foreign guests". In June 1926 the Senate of the Kaiser Wilhelm Society voted to establish an "International Institute" (Auslandsinstitut) in connection with a club house known as the "**Harnack House,**" which was to serve as a residence for foreign guests and a meeting place with German scientists. The project won the support

50. Harnack House, aerial view

not only of the Foreign Minister, but also of the Chancellor of the Reich Wilhelm Marx (1926), as well as the Budgetary Committee of the German Parliament. Harnack made a personal appeal for it to this committee in 1927 under the motto "Education is a national concern, science, however, must be international". He found the support of the Prelate George Schreiber in the plenum. In the end, the national government approved 1.5 million marks and the State of Prussia provided the property, while fund-raising activities supplied more than 900,000 marks for the interior decoration and furnishings. This amount was supplemented in 1928 through the sponsorship of individual rooms (in a height of 400,000 marks), with Carl Duisberg sponsoring the club room for assistants at the institutes ("Duisberg Room"), the General German Trade Union providing for the Carl Legien Chamber, the Christian Labor Union for the Joseph Görres Room and Vereinigte Stahlwerke (United Steelworks) funding the interior of the Bismarck Hall.
Plans for an additional boarding house for visitors were postponed (It was finally built by the American forces across from the Harnack House). The "guest laboratories" which had

Harnack House

51. Entrance to the lecture hall

52. Back side

initially been planned were not built, as it was not only more cost effective, but also more sensible to have the guests conduct their research activities in the various institutes themselves.

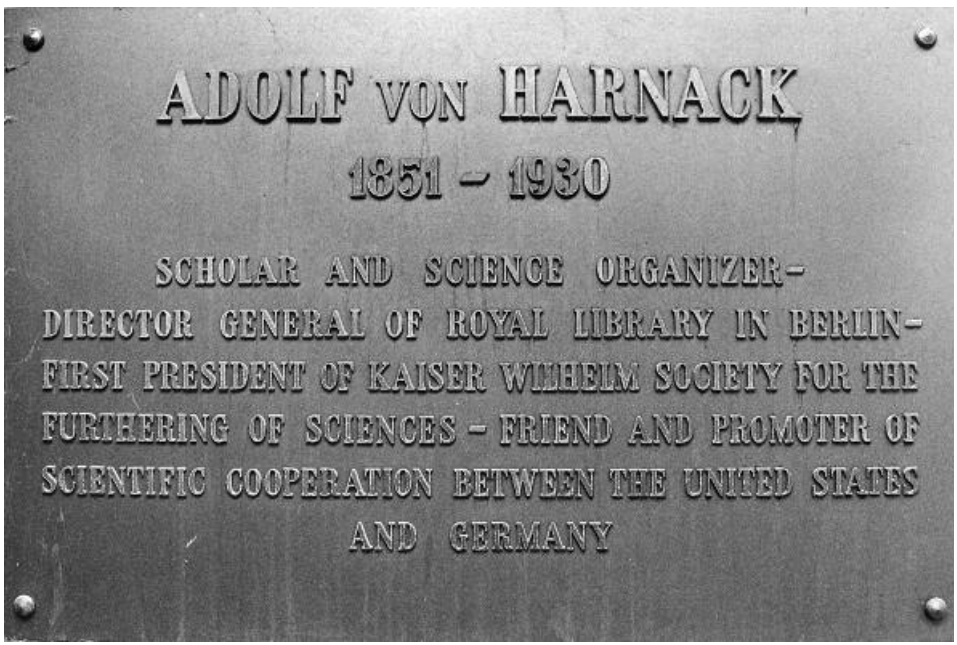
The dedication of the Harnack House, which had been designed by Carl Sattler of Munich, took place on 7 May 1929, the 78th birthday of Adolf von Harnack. Foreign Minister Stresemann attended the 17th General Assembly of the Society which followed, expressing the government's congratulations and hopes. Glum held the keynote speech on the purpose of the Harnack House, which was organized along the lines of an institute. Margarethe Carrière-Bellardi was named the director (Angelika von Schuckmann succeeded her in July 1938).

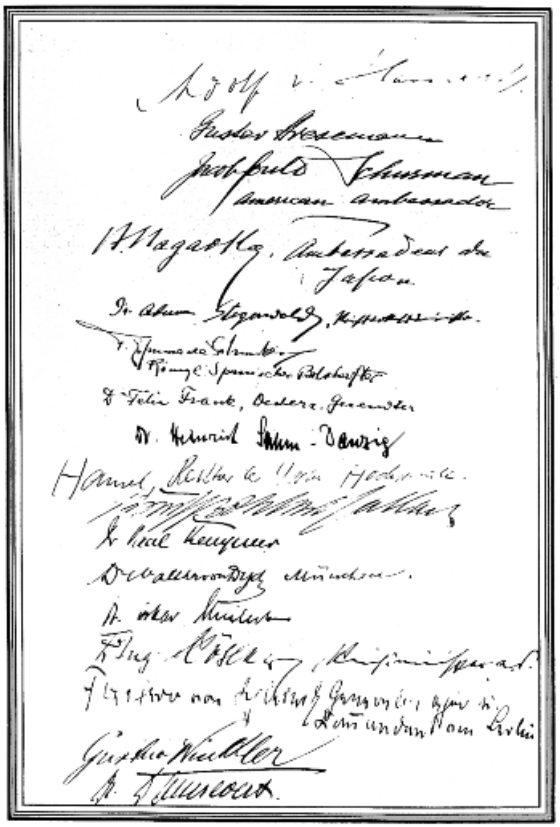
The following description from the KWG-Handbuch (1936) gives an overview of the various facilities of the house: "In the first place, the House serves as a club house for the staff of the Kaiser Wilhelm Institutes in Dahlem. There they are offered a simple and appetizing lunch for a reasonable price, served under a vaulted ceiling borne by the columns of the spacious Liebig Room. Each day 150–180 diners take advantage of this mid-day meal. After eating, they can relax in the comfortable easy chairs of the Bismarck Hall with its terrace and the large, groomed garden. There, one can drink coffee and read the paper or join a group to play chess or enter into discussion. Others prefer to take an hour's rest in the chaise lounges provided in the reading room before returning to their work in the institutes. In the morning before work or in the afternoon, staff take advantage of the three tennis courts [donated by Leopold Koppel, see Fig. 60], the brightly lit indoor gym or the bath and shower rooms for training and relaxation. Those members of the institutes who live near the Harnack House often return in the evening to enjoy dinner in the wood-paneled Duisberg Room or – on warm summer evenings – the garden. Rooms are also available for celebrations and parties of every variety, as well as for large or small collegial get-togethers." Out-of-town visitors were put up in the single rooms and the suites (with a total of 25 beds) in both of the upper stories of the Harnack House. Each of the rooms was given the "name of a great German". In 1932/33, for example, there were 230 guests (101 of whom came from abroad). Residents enjoyed a house library with monographs, 140 magazines and journals, as well as 10 German and an equal number of foreign newspapers. Shortly after the outbreak of the war in 1939, a central nursery for the children of staff and guests was added to the Harnack House.

The operating budget of the Harnack House was not only provided by a reserve fund, but primarily by renting out its facilities for congresses and events. In addition to the rooms mentioned above, the Goethe Hall for 500 persons and the Helmholtz Hall for 320 persons (with film projectors, microscopic projectors, etc.) were available for rental purposes.

53. Adolf v. Harnack

54. Bronze plaque mounted by the Americans at the entrance to lecture hall after the end of World War II



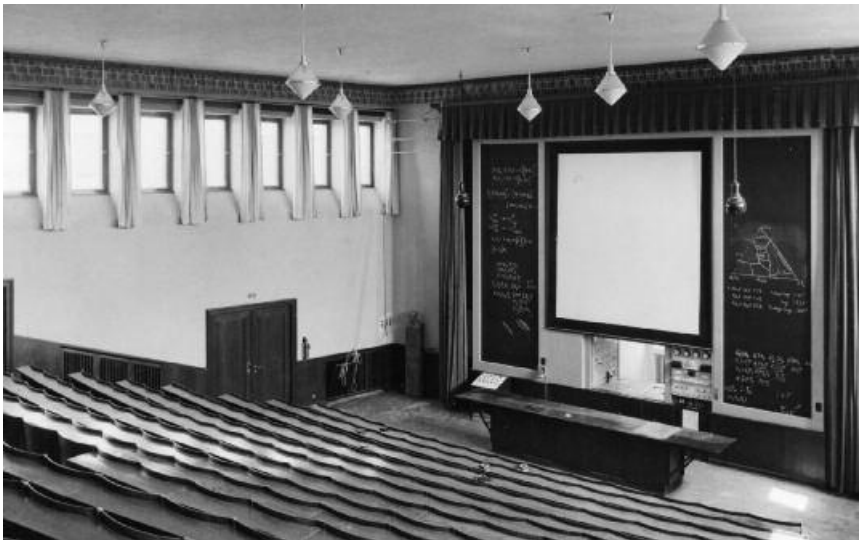


55. First page of guestbook for the Harnack House dedication ceremony on 7 May 1929

Social events could be held in the Humboldt, Leibniz and Mozart Rooms. They were used by sponsors and Scientific Members of the Kaiser Wilhelm Society, their friends and guests, by students with scholarships and graduate students. Congresses and social events were also organized for various branches of natural and social sciences, politics, the arts and technology. According to the inaugural words of the US ambassador and honorary member of the Kaiser Wilhelm Society, Jacob Gould Shurman, the purpose of the Harnack House was "not of a scientific, but of a social nature". Indeed it soon became a center of the cultural life of Berlin, and thus a "Mecca for lecturers and listeners from around the world" (Vierhaus/vom Brocke, 1990).

The Kaiser Wilhelm Society held its monthly President 's club and often its Senate and administrative committee meetings here. Four of its General Assemblies (1931, 1933,

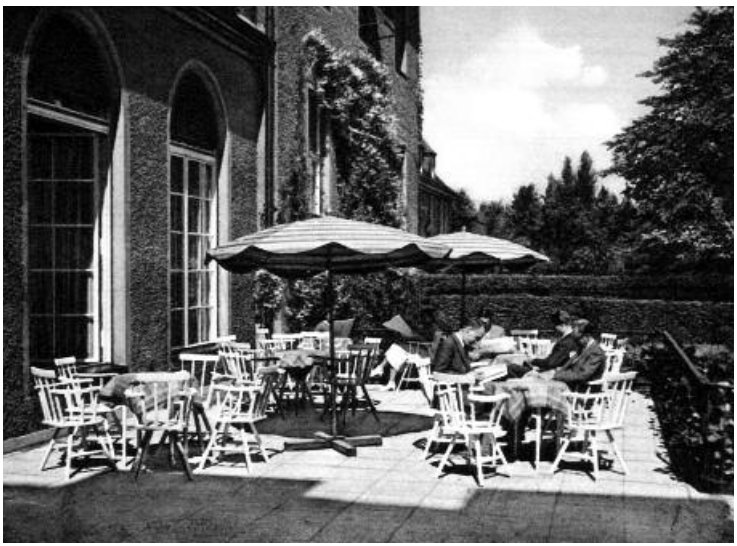
1936, 1938), including the anniversary assembly on the occasion of the 25th year of its existence, were also held at the Harnack House. As already mentioned, beginning in 1934, so-called "collegial evenings" (Kameradschaftsabende) were held for the staff of the institutes, as were commemorative celebrations, such as those for Adolf von Harnack (1930), Erwin Baur (1933) and Fritz Haber (1935). In violation of a government directive forbidding university staff from attending the latter event (Haber being Jewish), it developed into an impressive demonstration of intellectual resistance to the Nazi regime: "Haber stood by us and we are going to stand by him" (Planck). The public lectures of the Kaiser Wilhelm Society that had been held since 1923 in the Berlin Castle and other German cities were relocated to the Harnack House in the winter of 1930/31. Here they found a greater public and press resonance. The first lecture was held by Max Planck himself, who by then had been elected President of the Kaiser Wilhelm Society. On 12 November 1930, he spoke on "Positivism and the Real External World". In these winter lectures, scientific subjects of general interest were addressed, however, beginning 1933 compromises had to be made or were not to be avoided; a member of the SS (often with the rank of Standartenführer) was regularly in attendance. Alongside these lectures there were professional lectures in smaller circles, which were no less famous: the Haber Colloquia (since 1929, founded 1919); the Dahlem Medical Evenings led by Wilhelm Trendelenburg and Otto Warburg (founded 1929); as well as the Dahlem Biological Evenings. They became not just an expression of the Dahlem scientific community, they also contributed to the "Dahlem mythos". There were receptions for national and Prussian State ministries at the Harnack House, meetings of the Associated German Labor Union, balls held for the neighboring air force commando, meetings for parties and associations. Among the many events, two in particular stand out: the 1935 opening of the Imperial Film Archives by Reichspropagandaminister (minister of information) Joseph Goebbels with Adolf Hitler in attendance and the 1942 meeting of German atomic physicists called together by the War Production Minister Albert Speer (with a speech by Werner Heisenberg, director at the Kaiser Wilhelm Institute for Physics). At this meeting the decision was made to give up efforts to construct an atomic bomb. Previously, during a public lecture on November 4th 1941 in the Goethe Hall on "The Sense and Limits of the Exact Natural Sciences," Max Planck had openly warned: "... thus we cannot relegate the thoughts of the construction of the uranium machine to a mere utopian vision. Above all, it would be a matter of not letting the process take place explosively, but rather to slow it in its progression through chemical means, so that the speed of energy release does not exceed a certain limit. Otherwise, it is possible that it could turn into a dangerous catastrophe, not just for the local region, but for our entire planet" (taken from Planck's personal summary of his speech).



56. Helmholtz Hall

57. Liebig vault

58. Bismarck Hall



59. Terrace

60. Memorial for the banker Leopold Koppel alongside the tennis courts he funded for the Harnack House

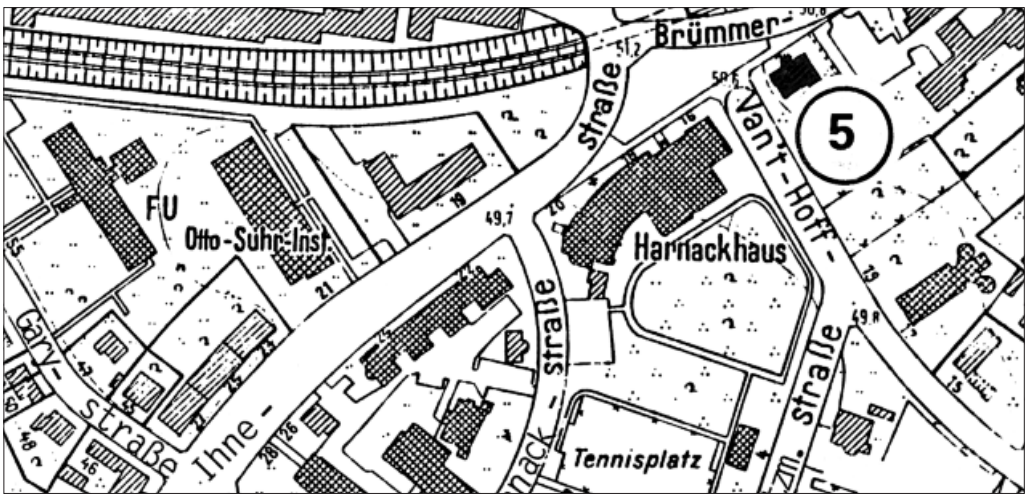
As the aerial bombing of Berlin increased during the Second World War and those made homeless took up residence or were fed in the Harnack House, the number of events declined. One of the last groups that met there in 1944 was the "Wednesday Society," with members, such as Werner Heisenberg, Ferdinand Sauerbruch, Johannes Popitz and Eduard Spranger. In February 1945 a part of the General Administration was also housed in the Harnack House due to the fact that the Berlin Castle could no longer be used because of bombing attacks.

The Harnack House was requisitioned by the Americans at the end of the war and served as the officer's club. It was expanded in 1953 (architect: Eckart Muthesius). The Americans mounted the two bronze plaques on either side of the entrance, commemorating Adolf von Harnack (Fig. 54) in both German and English. It was returned to the ownership of the Max Planck Society in August 1994, which it had been able to use periodically soon after the war. In 1952, for instance, Otto Hahn spoke on "Atomic Energy for Peace," and in 1953 the fourth General Assembly of the Society was held at the Harnack House. On this occasion the Regierende Bürgermeister ("Governing Mayor") of Berlin Ernst Reuter

announced the disbanding of the German Research Academy (Deutsche Forschungshochschule) and its incorporation in the Max Planck Society on July 1 of that year.
Today the Harnack House serves again as conference center symbolizing as well international and interdisciplinary cooperation as a "hotel for scholars" (Henning 2002). It was enlarged with the Dahlem Boarding House of the US Army across from the Harnack House (Ihnestraße 19) and donated by the Berlin Senate, for the purpose of such conferences. The Max Planck Society keeps this conference center in Berlin, where it has been registered since 1993, to be present at the initial place of its predecessor. The Max Planck Society has redesigned the building which was placed under historical protection in 1995 und reopened on June 21, 2000. Only the restoration of the Helmholtz Hall is still to be completed.

5. General Director's Residence

A few steps away from the Harnack House, just across Van't-Hoff-Straße in the direction of the Thielplatz subway station, lies the former residence of the General Director of the Kaiser Wilhelm Society, on the corner of Brümmerstraße 74 (previously Ihnestraße 14).



The construction of this house seems to have been less the product of planning, than it was an "involuntary" response to the growing family of the General Director of the Kaiser Wilhelm Society Friedrich Glum (1891–1974). At least this is how Glum – who, since 1925, had also been Scientific Member of the Kaiser Wilhelm Institute for Public and International Law – described it in his memoirs (1964). After the birth of their first child the couple's flat in Nikolassee had become too tight. When their own house in Zehlendorf-West that had been privately built "with great wringing of hands and the rest of my money" became too small with the arrival of a second child, Glum began to plan another new house. He had to ask the Kaiser Wilhelm Society to underwrite his mortgage. For the design of the house, Glum had already contacted the Munich architect, Professor "Carlo" Sattler, who was married to a cousin of his wife (daughter of Adolf von Hildebrand) and, in 1925, became the "house architect" of the Kaiser Wilhelm Society. The administrative

61. Friedrich Glum

62. Ernst Telschow

63. General Director's residence

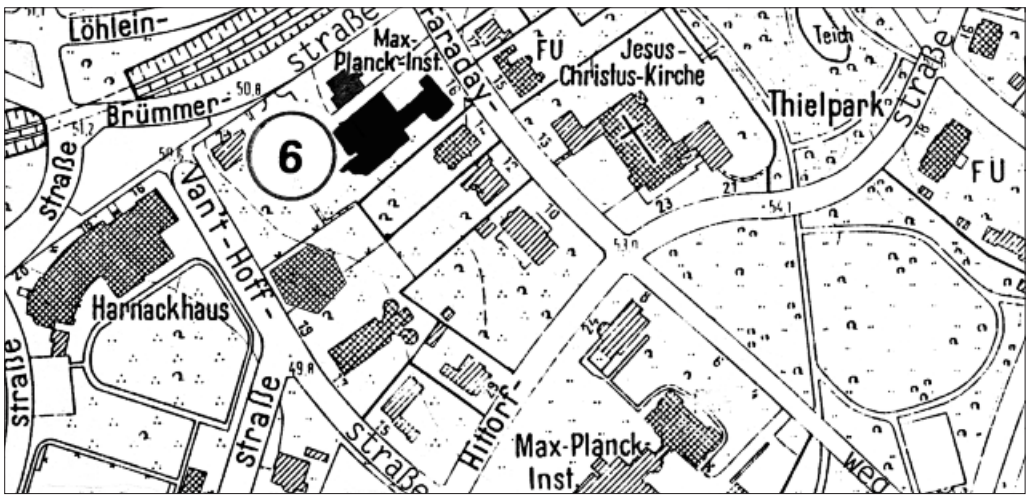
committee decided that it would prefer to build a residence to keep the General Director in Dahlem ("in recognition of the good financial investments" which the Director had made). In the end, it was decided that a house be built in which "there would be enough room for an entire little band of children". Glum reported, "Of course I was very thankful, but I wasn't entirely sure that I wanted to move to Dahlem, right next to the institutes and thus become the object of envy and gossip for the wives of directors and assistants". The house was built by Sattler in the summer of 1925 with the best of interiors and according to Glum's wish "in a southern German style with a peaked roof and barred windows such as one often finds in baroque houses in the countryside". He lived in this house until February 1938, when he was forced to leave following his dismissal from the post of General Director under pressure from the Nazi government. His successor, Ernst Telschow (1889–1988), lived in the house until the relocation of the general administration to Göttingen in early 1945.

After the war it was used by Hermann Muckermann (1877–1962) – who had been dismissed in 1933 from his position as department head in the Kaiser Wilhelm Institute for Anthropology, Human Genetics and Eugenics – and his Institute for Natural and Social Scientific Anthropology. Later it served as the director's residence for the Max Planck Institute for Molecular Genetics. Today it houses employees of Max Planck Institutes.

64. Hermann Muckermann

6. Kaiser Wilhelm Institute for Fiber Chemistry / Kaiser Wilhelm / Max Planck Institute for Silicate Research / Research Unit for the History of Cultivated Plants of the Max Planck Society

Next to the General Director's residence, across from the southern entrance to the subway – built for the Free University only after the end of the Second World War – there is a building, set back slightly from the street where today the Department of Chemical Physics of the Fritz Haber Institute is located, but which was originally built for the Kaiser Wilhelm Institute for Fiber Chemistry. This so-called front building is connected with a new building, erected in 1999 for the department mentioned, for which the former garden building (see fig. 65) was torn down. The entrance is located on Faradayweg 16. The newly acquired building at Faradayweg 14 is also used by the department. A good overall view of the building ensemble can be attained from the big parking lot next to the General Director's residence.



As a result of the raw material shortages during the First World War, industrial firms and the Prussian state proposed the establishment of an institute for textile research to the Kaiser Wilhelm Society. Advised by the chemists Emil Fischer and Fritz Haber and under

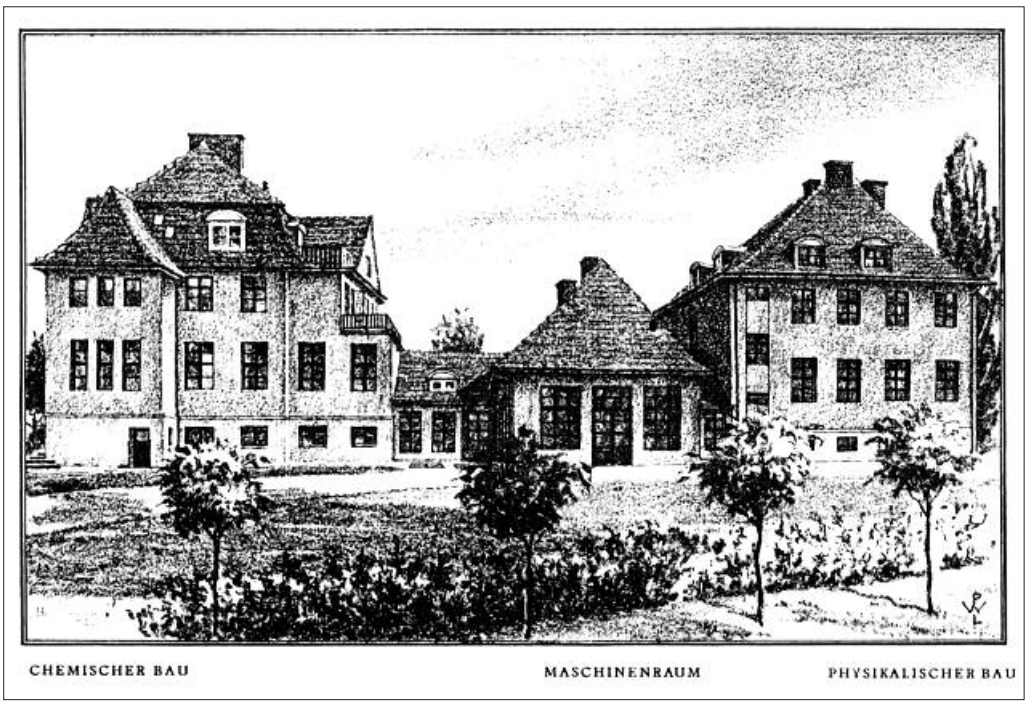
the condition that it remain scientifically independent and financially secure, the Society approved this plan. In 1919, as a first step, a textile department under the leadership of Reginald Oliver Herzog (1878–1935) of the Technical University in Prague was appended to Haber's Kaiser Wilhelm Institute for Physical Chemistry and Electrochemistry. On 12 March 1920, the **Kaiser Wilhelm Institute for Fiber Chemistry** was founded by the Kaiser Wilhelm Society and the Association for the Development of a Kaiser Wilhelm Institute for Fiber Chemistry. Its aim was both to investigate the "basic scientific knowledge of fibers," above all their chemical and physical constitution, as well as to make "contributions to the technology of specific topics," especially in the processing of natural fibers and the production of synthetic fibers (wool, cotton, silk, flax, starches, rubber, cellulose, rayon, etc.).

Herzog was appointed director and remained in this position until the institute was closed. After its provisional housing in the facilities of the Kaiser Wilhelm Institutes for Physical Chemistry and Electrochemistry, for Biology and for Chemistry, the new institute was able

65. Main entrance of the Kaiser Wilhelm Institute for Fiber Chemistry on Faradayweg (north side)

to move into its own building on 1 September 1922. It had been built by the Zehlendorf builder Otto Laternser according to designs by Hermann Muthesius and utilizing the basic building structure made available by the textile industrialist Oskar Ostersetzer. This front building contained the chemical laboratories, as well as the library and administration. The back building held the physics laboratory, including a laboratory free from vibrations – important because of the subway which passes by in the near vicinity – and a room in the basement that could maintain constant temperatures. The connecting building housed the machine room, the mechanical workshop and the X-ray room. The dedication ceremonies were held on 5 December 1922, on the occasion of the 9th General Assembly of the Kaiser Wilhelm Society with Reichspräsident Friedrich Ebert in attendance.

The institute was initially divided into three departments, one for organic chemistry, one for physical chemistry and one for technology. The department of organic chemistry primarily investigated the smallest chemical binding systems, mostly for carbohydrates (cellulose in particular). The department was initially led by Max Bergmann (1886–1944),



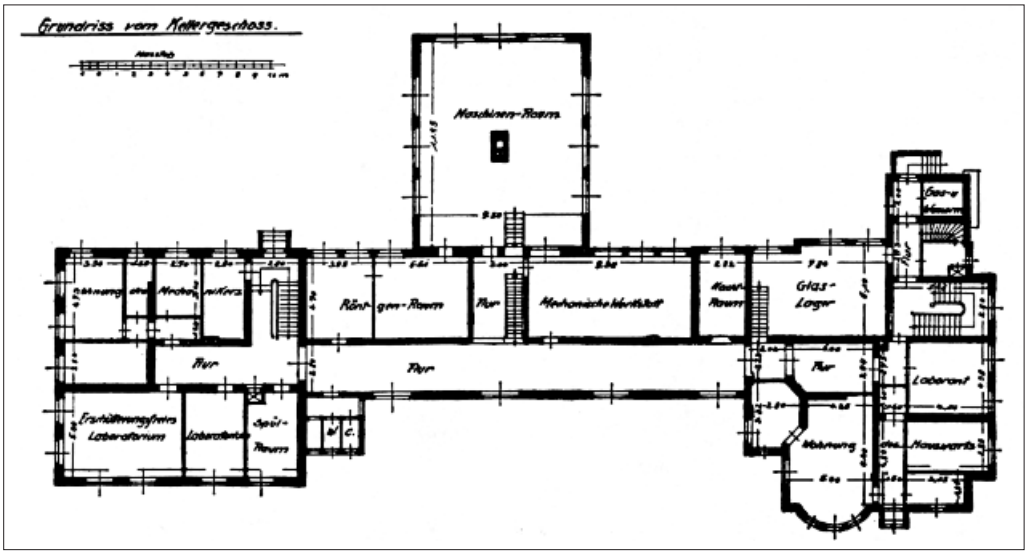
66. Overview from the west

who had been appointed in October 1920. However, he left again in December 1921 to assume the directorship of the newly founded Kaiser Wilhelm Institute for Leather Research in Dresden. His successor since March 1922, Burckhardt Helferich (1887–1982), left soon thereafter to assume a professorship at the University of Frankfurt am Main. It was therefore impossible to maintain the organic chemical investigations in their full scope.

The physical chemistry department focused on the study of fiber structure and the deformation of solids using physical and physico-chemical methods, primarily X-ray structure analysis. However, its head, the Hungarian Michael Polanyi (1891–1976), transferred to the Kaiser Wilhelm Institute for Physical Chemistry and Electrochemistry in September 1923. He was primarily engaged in colloidal-chemical experiments and made a significant contribution to the determination of the molecular weight of colloid-soluble substances. The mechanism of deformation and of fiber extension on the micellar level was investigated, primarily on swollen film (Herzog, Hermann F. Mark, Otto Kratky).

The technological department concentrated its studies primarily on cellulose, synthetic fibers and wool. Several new procedures were developed, among others for the production of viscose. The department was directed by A. Geiger until spring 1922 and then by Hermann F. Mark (1895–1992), who moved on to the Kaiser Wilhelm Institute for Silicate Research in 1926. Mark, who was one of the pioneers of polymer chemistry, also used X-ray structure analysis for the determination of the structure of organic compounds. His experiments initially concentrated on compounds with low molecular weight, but later also on compounds with high weight (among others starches, cellulose and non-vulcanized rubber).

The most important experimental method used at the institute was X-ray structure analysis, which over the years was perfected both theoretically and methodologically. The X-ray tubes were improved (among others by Rudolf Brill, who worked on silk fibroin). The contour line method that made the mathematical evaluation of X-ray diagrams possible was developed by Polanyi and Karl Weißenberg, who was temporarily employed at the institute. (Independent of these efforts, Ernst Schiebold of the University of Leipzig and previously at the Kaiser Wilhelm Institute for Metals Research was simultaneously developing a X-ray goniometer for better resolution of the contours.) These developments "contributed decisively to making X-ray structure analysis a relatively easily conducted procedure, which by the mid–1920s had developed into a standard method that could also be used on compounds of high molecular weight" (Löser, 1992). With the help of this tool, the crystalline structure of fibers could also be represented. It became possible to prove that "the structure of biological skeleton substances and catalyst carriers which had already been



67. Floor plan of the ground floor from the east

shown to be histologically similar...could be traced back to the same principle of construction and that the fiber form is determined by the molecular construction" (Herzog, 1930). Experiments which compared the mechanical properties of fibers with those of metals remained, in contrast, without success.

Herzog himself not only made important contributions to the understanding of fiber structure. In the investigation of compounds with a high molecular weight, he was also the first to apply diffusion measurement as well as optical methods, such as ultra-violet and infrared investigations and depolarization of Tyndal light (with Bruno Lange and Otto Kratky).

During its entire existence, the Kaiser Wilhelm Institute for Fiber Chemistry had to struggle with financial difficulties. The institute had initially been able to focus on basic research even if this was primarily in response to questions posed by industry. However, due to its financial situation, the institute later found itself compelled to also address practical "scientific-technical" problems, as industry was more willing to support results that could be implemented quickly. The ca. 200 patent applications testify to this. A temporary respite was provided by the rental of the front building to the Kaiser Wilhelm Institute for Silicate Research, which was founded in 1926. For reasons of his race Herzog was forced to retire in October 1933. Soon thereafter he accepted a professorship at the University of Istanbul.

68. Max Bergmann

69. Burckhardt Helferich

70. Reginald Oliver Herzog

He committed suicide during a vacation in Zurich on 4 February 1935. Due to its financial troubles, his institute was closed on 31 March 1934. Until that time it was administered by Wilhelm Eitel, the director of the Kaiser Wilhelm Institute for Silicate Research which then took over the entire facility.

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The founding of the Kaiser Wilhelm Institute for Silicate Research, like the Kaiser Wilhelm Institute for Fiber Chemistry, took its lead from the interests of industry. German industrialists had watched with great concern as Germany's leading position attained in the field of optical lenses due to the work of Otto Schott, Ernst Abbe and Carl Zeiss slowly lose ground to the USA. In response, the German Society for Glass Technology (Deutsche Glastechnische Gesellschaft) under Max von Vopelius submitted a request to the Kaiser Wilhelm Society for the establishment of a glass research institute. The Society expanded this request to encompass the entire field of "silicate chemistry" with the inclusion of ceramic and cement research, and its Senate approved the new concept on 7 December 1925.

The Königsberg mineralogist Wilhelm Eitel (1891–1979) was selected as institute's director, a post he assumed in April 1926. Hermann F. Mark (1895–1992) and Franz Weidert (1878–1954) were named Scientific Members soon thereafter. Mark, however, who had until that time been on the staff of the Kaiser Wilhelm Institute for Fiber Chemistry, left in January 1927 to take up a job in the industry. With support from the German Society

Kaiser Wilhelm / Max Planck Institute for Silicate Research

71. From the west (torn down in 1997 to make room for the new building for the Department of Chemical Physics of the Fritz Haber Institute)

72. Physico-chemical laboratory

for Glass Technology and the German Ceramics Society (Deutsche Keramische Gesellschaft) in particular, the Kaiser Wilhelm Institute for Silicate Research, as it finally came to be known, began work on 1 October 1926. Its facilities were located in the front house of the Kaiser Wilhelm Institute for Fiber Chemistry. These rooms had been rented and remodeled for its purposes, and its staff was allowed to use the X-ray laboratories and machine room located in the middle building (see above). For the synthesis of new chemicals under high gas pressures, an additional machine building for high-pressure apparatuses was soon built with the help of the Cooperative Aide Council for German Science in front of the connecting building.

The institute, a "symbol of the will of German science and industry to rise again" (Eitel, 1927), initially concentrated on the field of chemical physical petrology and technical silicate research. Appended to this main department led by Eitel, was a department for glass physics (Weidert) and one for radiography (Carl Gottfried). A close connection with the technical college was planned from the start, in order to educate young scientists for the institute and the industry. Accordingly, Eitel, who received a salary from the government, also assumed the chair for physical chemical mineralogy at the Technical College Berlin-Charlottenburg. Weidert took on a teaching assignment for technical optics. In response to industry wishes, "gentlemen working in technical fields, who would like to concentrate on a special problem, (were provided with) the possibility of working" at the institute (Eitel, 1927).

In the first years, the primary research focused on the composition of glasses and silicate crystals. Here, analysts, microscope and X-ray technicians worked together. Work was also carried out on the molecular structure of silicates, their thermo-chemical constants and dross silicates. Weidert was successful in the production of colored glasses with rare earths. After a few years, however, he took over the direction of the Optics Institute of the Technical College of Berlin and left the institute. Alongside the important contributions which Woldemar Weyl made in color glass research, the wide-ranging works of Bruno Lange also deserve mention. He made a name for himself above all through the development of a photocell that was of great importance for (spectral) photometry. After differences with Eitel, Lange left the institute in 1933 and went into business for himself with a factory for optical instruments (photometers) in Berlin-Zehlendorf, which still does business today.

Increased contact between the institute and the cement and steel industries led to new areas of research. This was manifested, in particular, by the appointment of Hermann Salmang (1890–1961) as a Scientific Member of the institute in August 1932. Salmang continued to work at the Technical University in Aachen, where a "sort of branch office"

73. Wilhelm Eitel

74. Hermann Mark

75. Luise Holzapfel

of the Kaiser Wilhelm Institute for Silicate Research was founded at his department for industrial mineralogy (Gesteinshüttenkunde). Due to the Nazis' Race Laws, he lost his professorship in 1935 and was removed from the Kaiser Wilhelm Institute in the same year. He then emigrated to Holland, where he lived in hiding during the War (in 1956 he was appointed an External Scientific Member of the Max Planck Institute for Silicate Research).

The expansion of the fields of research and their focus on more technological questions made it necessary to re-organize the institute into three departments. The existing building soon appeared too small. The closure of the Kaiser Wilhelm Institute for Fiber Chemistry in 1934 offered a welcomed opportunity to expand and improve the facilities. The department for glass research, which was directed until 1937 by Woldemar Weyl, continued to work on the properties of glass as well as the melting processes of various forms of glasses. Alongside research on the composition and structure of silicates and silicate compounds, the X-ray (and structural) department, led by Carl Gottfried until 1933, by Wilhelm Büssem until 1937 and by Herbert O'Daniel until 1944, investigated the hydraulic bonding material in Portland cement. The National Socialists' assumption of power brought with it an enormous boost to the department of cement technology, which was led by Hans Ernst Schwiete (until 1938). The promotion of concrete road construction posed a lot of fundamental and technical problems in the production and use of cement. In addressing these problems, the Kaiser Wilhelm Institute for Silicate Research drew on practical experience in the field and worked in close cooperation with the General Inspector for German Roadways, Fritz Todt, with the directors of the "Reichsautobahn", and, as of 1935, with the newly founded "Research Society for German Roadways". Now the institute also developed guidelines and rules for concrete road construction.

In July 1935, the Department of Silicate and Construction Chemistry of the Technical College in Karlsruhe was integrated into the institute in Dahlem. Its director, Adolf Dietzel (1902–1993), was appointed head of the technological department. This completed plans for increased support of practical technological research, above all in the fields of ceramics, glass and enamel technologies.

New possibilities opened for the cement and clay research with the loan of one of the first Model 10 Siemens electron microscope by the Notgemeinschaft der Deutschen Wissenschaft to Eitel in 1940.

Despite changes in personnel, the war years did not bring any essential changes in the research work. In 1943 the institute, like the other Kaiser Wilhelm Institutes, was to have been relocated. However, it was not possible to find a building that could house all of the departments together. Thus the management, library and administration and the new

department led by Luise Holzapfel (1900–1963), which investigated organic silicate compounds, remained in Berlin. The other departments were sent to four different locations in Unterfranken (Ostheim v. d. Rhön, Fladungen, Königshofen and Bischofsheim i. G.), where they were fully functional until the end of the war. In accordance with Allied Law Robert Havemann, who was interim director of the Kaiser Wilhelm Society in Berlin, dismissed Eitel, who had sympathized with the Nazi system, in December 1945. In 1946, Eitel emigrated to the USA, where he worked for the US Bureau of Mines in Norris, Tennessee.
The relocated institute was provisionally directed by Adolf Dietzel and, as of mid-January 1946, by Carl Schusterius. Beginning in June 1946, Luise Holzapfel served as department head of what was left of the institute in Dahlem. Because her successful work on silicone fell under the research ban established by the Allies, she concentrated primarily on the study of silicosis. Her department was financed by the Berlin Magistrate until the end of 1950. In April 1951 it was reintegrated into its old institute as the "Berlin branch". The building was taken over by the Fritz Haber Institute upon the closing of the department at the end of 1962.
Due to the general political situation (the division of Berlin), the departments which had been evacuated did not return to Berlin-Dahlem. Instead, the Max Planck Institute for Silicate Research was brought together under one roof in an institute building in Würzburg in the summer of 1951.

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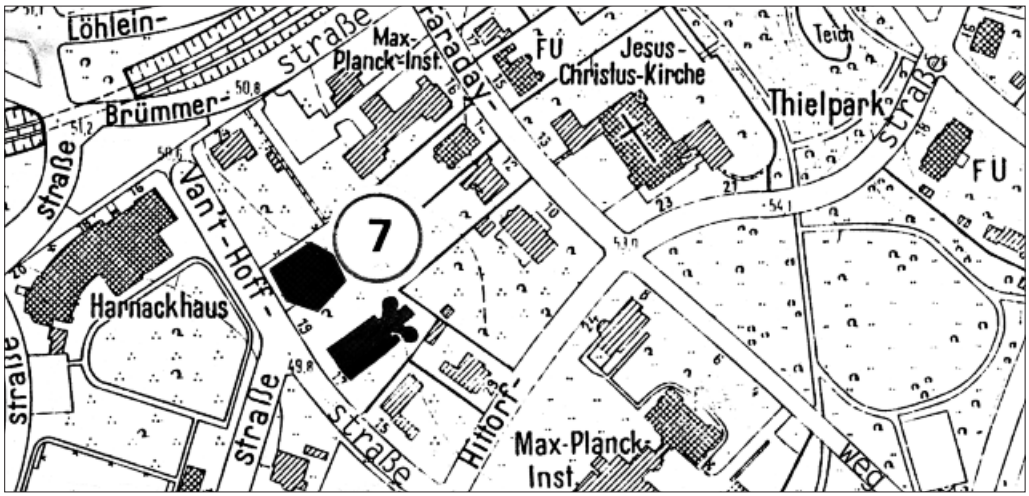
In the middle of the Second World War, the Kaiser Wilhelm Society in Vienna founded a Kaiser Wilhelm Institute for the Research of Cultivated Plants, which began work on 1 April 1943 under the leadership of Hans Stubbe (1902–1989). In October of the same year, Elisabeth Schiemann (1881–1972), a student of plant geneticist Erwin Baur, joined the institute, in order to develop – though initially from Berlin – a Department for the History of Cultivated Plants. As a result of war-related evacuation, most of the departments were relocated to Stecklenberg/Ostharz. Elisabeth Schiemann's department, however, remained in Berlin, where it was temporarily located in the Kaiser Wilhelm Institute for Biology. Because Hans Stubbe later rebuilt his institute in Gatersleben in the foothills of the Harz mountains in the Soviet Occupation Zone, only E. Schiemann, with her West Berlin department, remained in the Kaiser Wilhelm Society. After relocating three times within Dahlem and having had to put up with very difficult working conditions that led her to several extended foreign stays, her institute found a site in the Garden House of the Kaiser Wilhelm Institute for Silicate Research in October 1949; the building has since

been torn down. One year earlier her institute had been included in the German Research Academy as an independent "Institute for the History of Cultivated Plants". When this organization was dissolved the institute was transferred, along with the other Kaiser Wilhelm Institutes in Dahlem to the Max Planck Society, as a "research unit" in July 1953. For three years, she was able to pursue her biological and historical research on the history of cultivated plants. She concentrated on three thematic topics: "evolution and sexual differentiation of strawberries," "strains and evolution of the grain family" and "the identification of prehistoric cultivated plants". When she retired on 31 March 1956, her research unit was closed.

76. Elisabeth Schiemann

7. Ernst Ruska Building

From the parking lot of the Fritz Haber Institute in Brümmerstraße a path leads between the building complex of the department for chemical physics and the General Director's residence and through a small park. On the right is a modern hexagonal building with blue window frames. This is the "Network Center of the Berlin and Brandenburg Max Planck Institutes (GNZ)". It was designed by Klaus Günther, architect and building consultant for the Dahlem Max Planck Institutes, and completed in 1987.
Rising up behind it is another building with two high, light-blue towers that face the garden: the "Ernst Ruska Building".

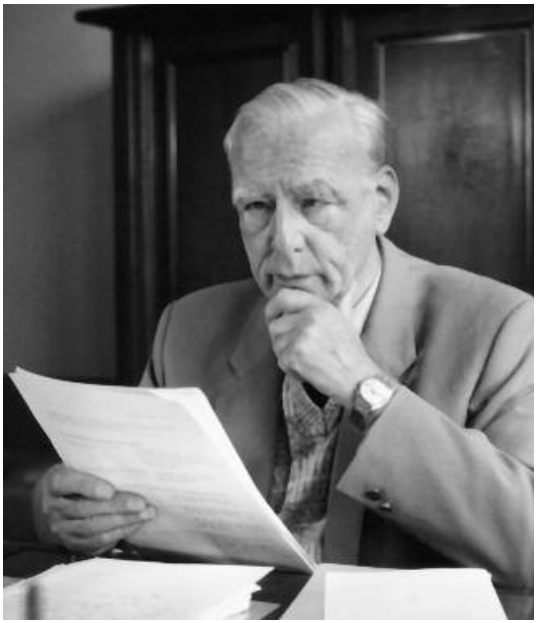


The inventor of the electron microscope Ernst Ruska (1906–1988) became a Scientific Member at the Fritz Haber Institute of the Max Planck Society in 1954. His Institute for Electron Microscopy, where he served as director from 1957 to 1974, received its own building, designed by the architects Geber and Risse in 1957 on the institute's property (Van't Hoff-Straße 9). The completion of the building, however, took until 1963.
Around ten years later, progress in research led to the need for a second building, construction of which began in 1972. It was opened by Ruska in 1974 (Van't Hoff-Straße 17).

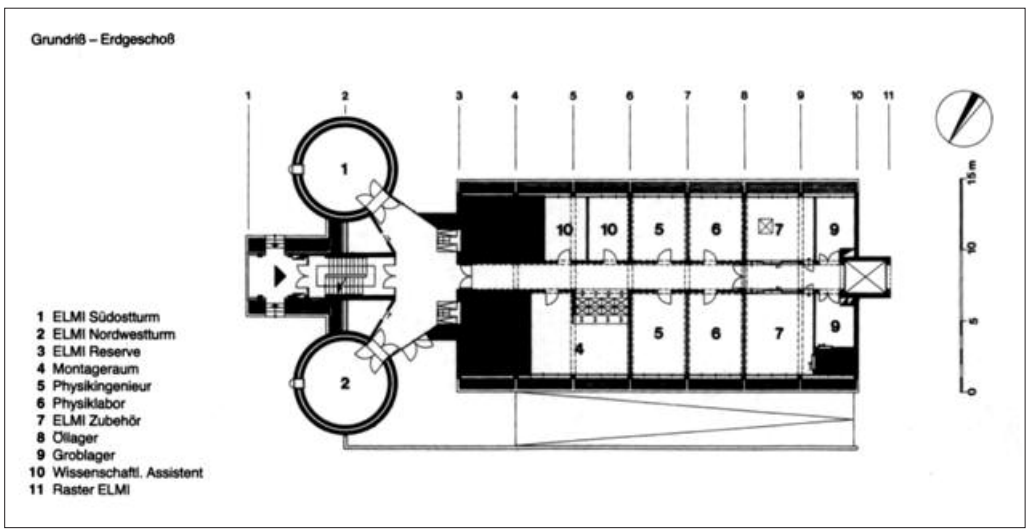
Ernst Ruska Building

77. North side with pavilion in the garden of the Willstätter residence

78. From the east



79. Ernst Ruska



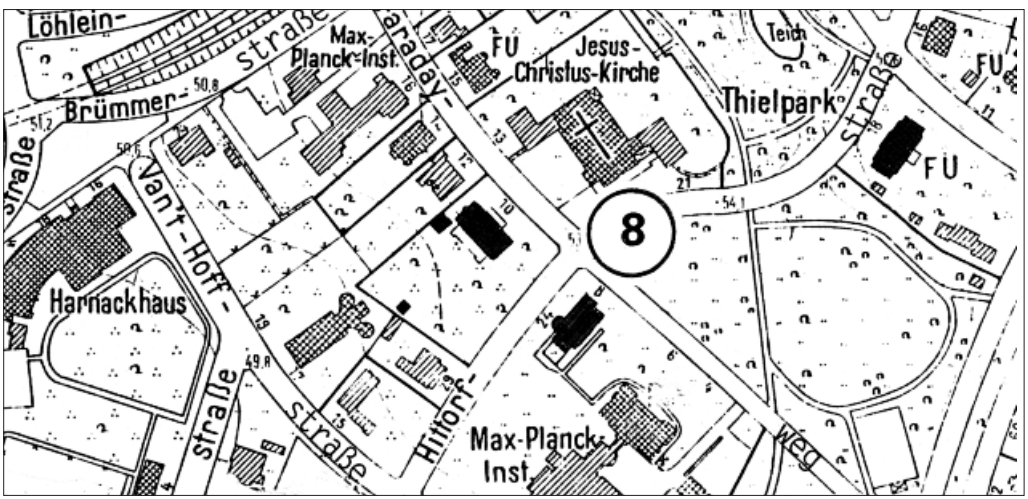
80. Floor plan of the ground floor

Unfortunately, the building, designed by Gerd Hänska in cooperation with the building department of the Max Planck Society, is not in keeping with the architectural style of the local community. This is the result of the functional demands, which require a working environment that was free from microseismic influences. To achieve this, the electron microscopes can either be installed on a hanging or a standing pendulum foundation. Then, besides the use, new arrangement possibilities can be tested in the development and assembly of new electron microscopes. After Ernst Ruska received the Nobel Prize for physics in 1986 for his development of the electron microscope, the building was renamed the **Ernst Ruska Building**. There is no "Berliner Gedenktafel" (Berlin Memorial Plaque) at the institute, but at his private residence in Dahlem, Falkenried 7.

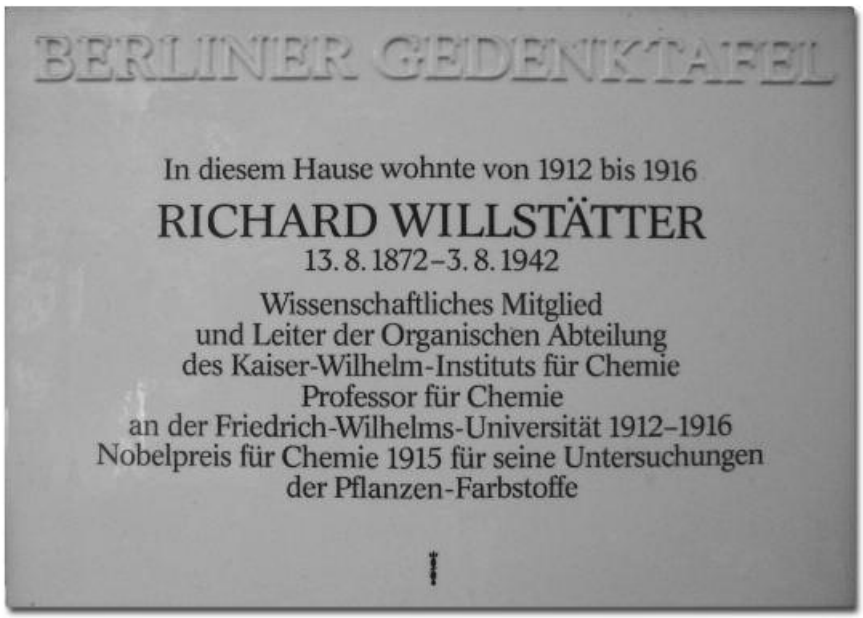
The goal of the department and institute was initially the development of high performance electron microscopes. Promoted by Ruska's brother, the physician Helmut Ruska (1908–1973), the microscopes also served in structural and functional analysis in medicine and biology, for example, in the study of the intracellular development of viruses. Ruska was followed by Heinz Gerischer, who served as interim director until 1977, when Elmar Zeitler was named Scientific Member and assumed the directorship of the Institute for Electron Microscopy. After his retirement it was closed, the building is now used by the Electronic Laboratory and the Department for Inorganic Chemistry.

8. The Directors' Residences: Richard Willstätter, Fritz Haber, Carl Neuberg

A garden path leads by the Ernst Ruska Building towers and out to a villa known as the Richard Willstätter House (formerly the Max Planck House) up above on Faraday Weg 10 at the corner of Hittorfstraße with a Berlin plaque right to the entrance door remembering its builder. Kitty corner from this building is another large house with its entrance a Hittorfstraße 24 (postal address: Faradayweg 8), the former director's residence of the Kaiser Wilhelm Institute for Physical Chemistry and Electrochemistry. The Jesus Christus Church across from the Richard Willstätter House, which was built by Jürgen Bachmann, is also worth noting. This church (together with the of St. Anne village church) formed the Dahlem core of the Bekennende Kirche around Martin Niemöller (The Bekennende Kirche was a Lutheran church movement that resisted the Nazi Regime). Elisabeth Schiemann and Baron Otmar von Verschuer were among its members. Behind the park, on the right side of Hittorfstraße (no. 16) one can see in the winter the gable of a late classical home, which was built by Carl Neuberg, the director of the Kaiser Wilhelm Institute for Biochemistry.



81. Richard Willstätter's residence



82. Willstätter plaque

Berlin architect, Alfred Breslauer, designed the house that chemist **Richard Willstätter** (1872–1942) had built in 1912, when, after some hesitation, Emil Fischer finally convinced him to leave Zurich to take up a position as Scientific Member and director of the organic department of the Kaiser Wilhelm Institute for Chemistry. At the same time he assumed Jacobus Henricus van't Hoff's professorship at the Berlin University (see the "Berliner Gedenktafel" to the right of the entrance).

In Dahlem, Willstätter continued his chlorophyll investigations, for which he was awarded the Nobel Prize in 1915, the first for a scientist at the Kaiser Wilhelm Society. Soon after his arrival, however, he turned his attention to the research of leaf and flower pigments. For this purpose he planted flower gardens with cornflowers, dahlias, chrysanthemums, etc., in a field across from his house, rented from the domain administration, and between the Kaiser Wilhelm Institutes for Chemistry and Physical Chemistry. Years later, Lise Meitner still fondly recalled the beauty of the gardens (1954). With the outbreak of the First World War, Willstätter gave up this field of research and instead worked successfully on filter inserts for gas masks at the request of Fritz Haber. As he never redeveloped a committed interest in this research – in marked contrast to Haber with whom he had entered into a deep, lifelong friendship – he took on professorship of his mentor Adolf von Baeyer at the Munich University. He assumed the post all the more readily because of the death of his eleven-year-old son in Dahlem shortly before. Willstätter, a widower whose wife had died seven years earlier, left Berlin in 1916, accompanied only by his daughter Margarete. The den, with many valuable azulejos, still remains from the original era of the villa and also contains Robert Schumann's concert piano, inherited from the Fritz Haber Institute.

In the early 1920s, a Berlin banker bought his home, which was to be subsequently inhabited in the thirties by the police general and SS Obergruppenführer Kurt Daluege (1897–1946). After the War the Lutheran Bishop of Berlin Otto Dibelius (1880–1967) lived there. Since 1970, the residence has served as a meeting place for the Max Planck Society in Berlin respectively as director's and guests residence for the Fritz Haber Institute. Today there are seminar rooms and part of the Theory Department is housed there.

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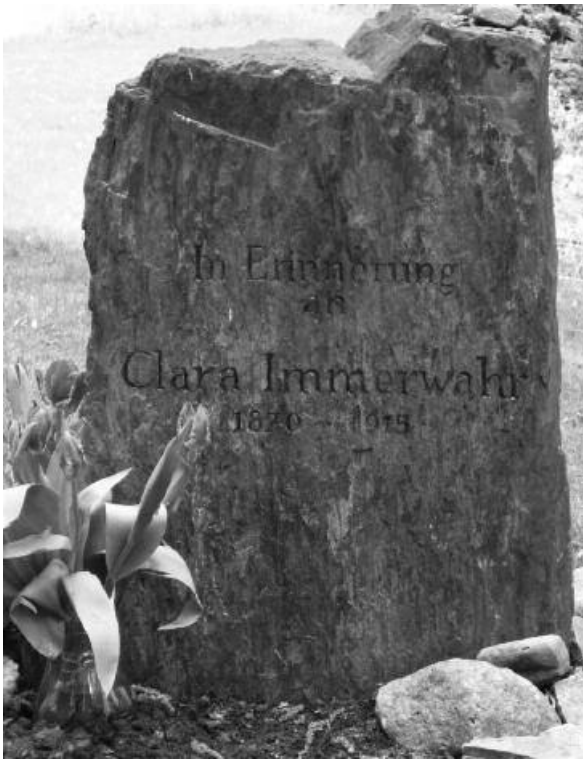
The director's residence of the Kaiser Wilhelm Institute for Physical Chemistry and Electrochemistry, like the institute building itself, was built by Ernst Eberhard von Ihne in 1912. **Fritz Haber** (1868–1934) lived here with his family until his emigration in autumn 1933. His first wife, Clara Haber (maiden name Immerwahr), was one of the first woman chemists to receive her doctorate in Germany. However, after the birth of their son,

Fritz Haber's residence

83. Entrance

84. View of winter garden, around 1920

85. Memorial for Clara Haber, maiden name Immerwahr



Hermann, she did not do any further research. The reasons for her suicide in the spring of 1915 have never been clarified. The family's anamnesis and Lise Meitner's report to Edith Hahn indicate that it may more have been the result of depression, others speculate that it was in connection with Haber's involvement with gas warfare (e.g. v. Leitner, 1993), which his wife considered to be a "perversion of science". The "IPPNW - Deutsche Sektion der Internationalen Ärzte für die Verhütung des Atomkrieges / Ärzte in sozialer Verantwortung e.V." established the "Clara-Immerwahr Award" in 1991 to "promote responsible behavior and courageous action". The Fritz Haber Institute of the Max Planck Society recently placed a memorial in the yard. Haber's second marriage in World War I with Charlotte Nathan with whom he fathered the twins Eva and Ludwig, ended several years later in divorce.
After his appointment in the spring 1914, Albert Einstein also lived temporarily in Haber's house as a guest of the institute. Hermann Mark and Rudolf Brill are reported to have conducted experiments for the Kaiser Wilhelm Institute for Fiber Chemistry in the basement

of the house. In the 1930s, the house was inhabited by the new director, Peter Adolf Thießen, and Rudolf Mentzel, Scientific Member at the institute. After the War, Max von Laue, Rudolf Brill and Else Knake, among others, lived in the house. Today, the building still provides housing for members of the Fritz Haber Institute as well as a lecture room.

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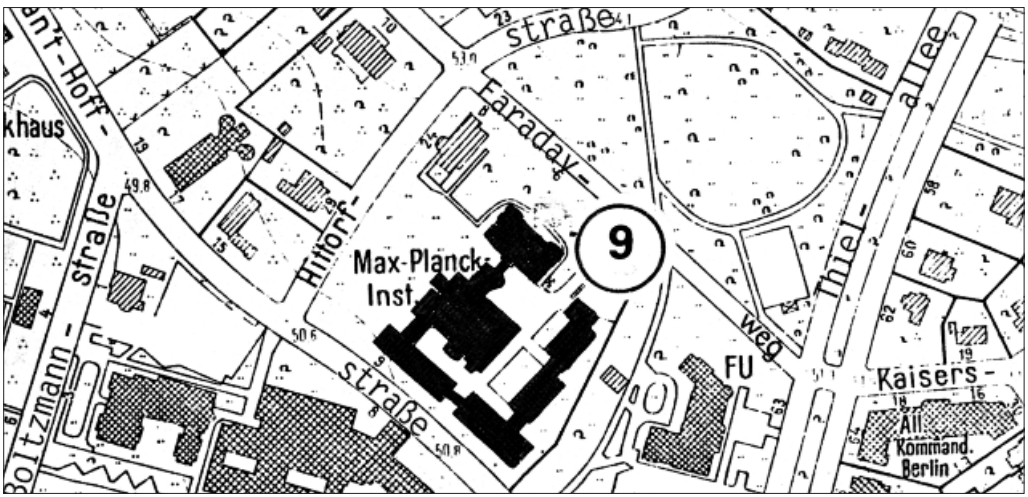
The biochemist **Carl Neuberg** (1877–1956) also built his private house on domain lands. Neuberg had been Scientific Member and director of the biochemical department of the Kaiser Wilhelm Institute for Experimental Therapy since 1913. He probably lived in the house until his emigration shortly before the outbreak of the Second World War. His wife Hela (maiden name Lewinski) and his daughters Irene and Marianne had already emigrated to the USA. Today, the building houses the Medical Forensics Institute of the Charité, Campus Benjamin Franklin and has been augmented by two buildings erected in the park in which Pathology and the Department of Toxicological Chemistry / Hair Analysis are located.

86. Carl Neuberg's residence

9. Kaiser Wilhelm Institute for Physical Chemistry and Electrochemistry / Fritz Haber Institute of the Max Planck Society

From Hittorfstraße at the corner of Faradayweg, the tour leads along the fence of the main building of the Fritz Haber Institute, the "Kaiser Entrance" (below the balcony) having long ago been bricked in, to the driveway of the institute, Faradayweg 4–6, on the right side of the building. One point of interest is the "Haber linden", planted in commemoration of Haber's 60th birthday on 9 December 1928 as the inscription by Robert Havemann on the base explains (The tree was replanted, the original having been removed by the National Socialists. The inscription was renewed in 1946). Standing at the tree affords a view of most of the buildings erected over the course of the decades for the institute, the only Kaiser Wilhelm / Max Planck Society institute to reside since its inception, without interruption, in Berlin-Dahlem. In the gable above the entrance the institute's name "Kaiser-Wilhelm-Institut für physikalische Chemie und Elektrochemie" can still be seen (see Fig. 87). A small exhibition in the anteroom to the library deals with the history of the institute. The busts of Friedrich Althoff (Fritz Schaper), Adolf v. Harnack (Hugo Lederer) and Albert Einstein (Hermann Hubacher) can also be found here.



When the Kaiser Wilhelm Society was founded in 1911, it was planned that its first institute be dedicated to chemical research, including physical chemistry and electro-chemistry. But due to the fact that the donations were not sufficient, these fields were separated from the institute and, upon the recommendation of Friedrich Schmidt(-Ott) of the Prussian Ministry of Culture, the Koppel Foundation, which already existed for the promotion of Germany's intellectual relations abroad, was won over for their financing. It was therefore possible for the Koppel Foundation, with the support of Prussia, to set up its own Kaiser **Wilhelm Institute for Physical Chemistry and Electrochemistry** with an additional grant in the year the Kaiser Wilhelm Society was founded. While the state provided a suitable

87. Main entrance of the Kaiser Wilhelm Institute for Physical Chemistry and Electrochemistry (now the Fritz Haber Institute of the Max Planck Society)

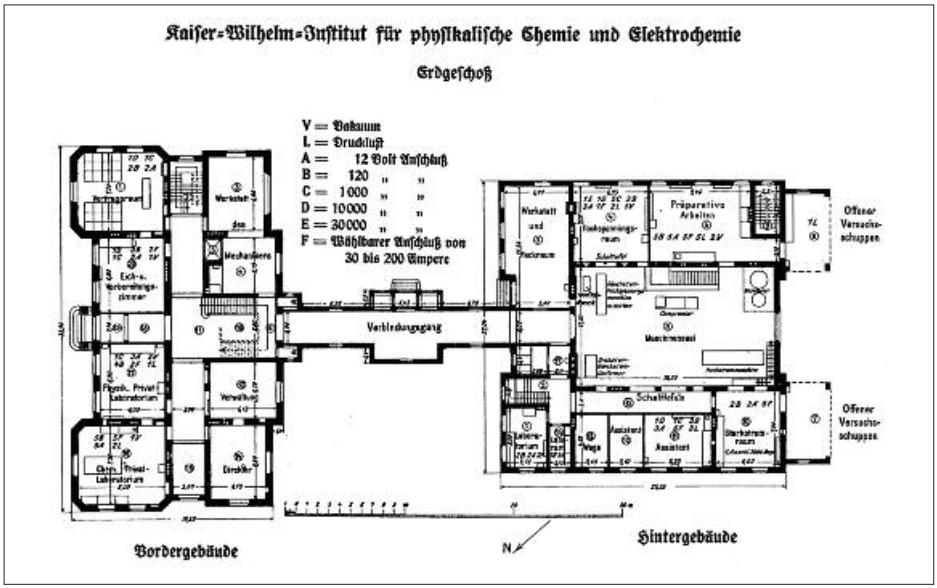
piece of property in Dahlem, assumed the salary of the institute's director and provided a subsidy for the operating costs, the Saxon "Geheime Kommerzienrat" and Berlin banker Leopold Koppel (amongst other things owner of the Auer plants, the Bristol hotels and the "Wintergarten") donated 700,000 marks for the construction and equipment, increasing this by another 300,000 marks at the opening in October 1912. Furthermore, he guaranteed the maintenance of the institute for ten years. Even though the new institute was not directly administered by the Kaiser Wilhelm Society in the beginning, its structure and tasks completely coincided with the principles of the Society.

The Kaiser's court architect, Ernst Eberhard v. Ihne, built the new institute along with the directors' villa (total construction volume of 18,000 m^3 with 2,500 m^2 usable space) in the record time of only 11 months, making every effort to combine aesthetic aspects with the functional requirements. For instance, he covered the roofs with slate from Thuringia and selected a light grey paint for the façade to avoid "color radiation reflecting into the rooms" and possibly disturbing the experiments. The first general meeting of the Kaiser Wilhelm Society was held in its machinery hall on the occasion of the opening celebration, along with that of the Chemistry Institute, by Kaiser Wilhelm on 12 October 1912. The Noble laureate Paul Ehrlich, who had been appointed by the Kaiser to the Senate of the Society, addressed the gathering, speaking on the subject of "Modern healing methods". The second general meeting in 1913 was also attended by Wilhelm II.

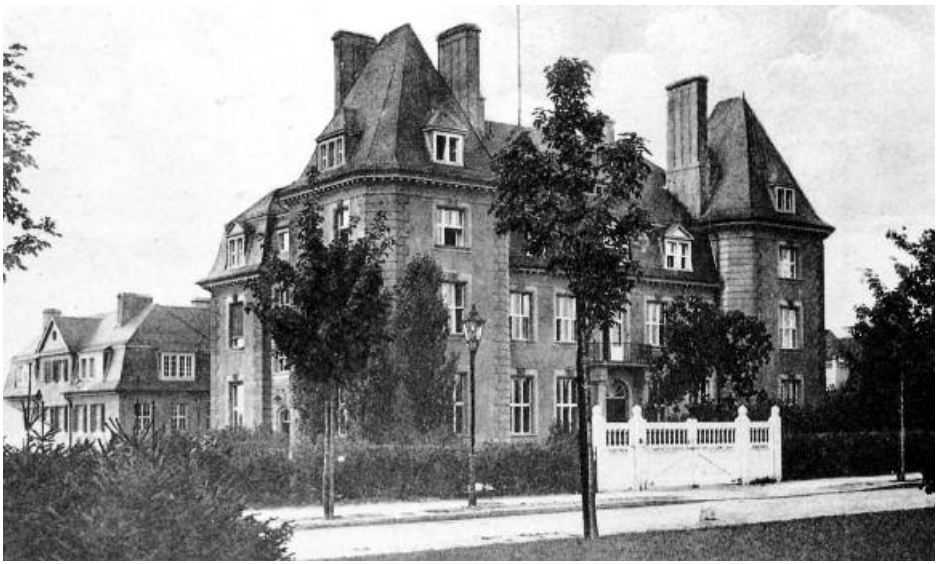
At the recommendation of Svante Arrhenius (1859–1927), Fritz Haber (1868–1934) from Karlsruhe was appointed director of the new institute. Haber was one of the few persons then representing physical chemistry, a discipline that was rarely espoused at German universities. He early on discovered the role of this field as a moderator between physics and chemistry and its importance, especially in chemical processes. Haber's greatest achievement, making atmospheric nitrogen available for the synthesis of ammonia (1908), brought him rapid fame so that in Berlin he was chosen over Walther Nernst.

The number of staff members at the new institute, which "from the start had significantly more resources and better laboratories at its disposal than any other university institute in a similar discipline" (KWG-Handbuch, 1936), was not very large before the First World War, as the institute was still in a developmental phase. In addition, right from the start, "scientific guests" were brought in to promote scientific exchange. Amongst these were Albert Einstein, Rudolf Ladenburg, Alexander Nathansohn, Fritz Reiche, Karl Weißenberg, Margarethe von Wrangell. Some of these guests were later appointed Scientific Members or External Scientific Members of the institute. Alongside the imperial commissioned invention, the "Schlagwetterpfeife" (foul-weather pipe), the work of the institute until 1914 focused primarily on the continuation of Haber's research on ammonia equilibrium

88. Kaiser Wilhelm II with the President Adolf Harnack leaving the Kaiser Wilhelm Institute for Physical Chemistry and Electrochemistry after the 2nd General Assembly on 28 October 1913



89. Floor plan



90. Main building on Faradayweg, around 1917

(at different pressures and with different catalysts). Otto Sackur, who died in a tragic accident at the institute in 1914 while performing experiments with explosives, worked on the quantum theoretical evaluation of the equilibrium state of the gases. In addition, a quartz fiber manometer was developed for low gas pressures.
The First World War broke out before the development of the institute had been completed. Conscription brought work at the institute practically to a standstill. Haber, a patriot and assimilated Jew, adhered to the slogan, "in peace for mankind, in war for the fatherland", immediately placing his institute at the disposal of the national defense, initially for minor tasks for the military administration. The assignment of more staff members soon allowed the institute to solve major wartime supply problems, especially nitrates for explosives and fertilizer. As a result of the blockade of Chilean saltpeter by the English, nitrate became an important war commodity. But his institute was able to quickly increase the production of synthetic saltpeter. The non-military research on the thermodynamic qualities of ammonia (Setsuro Tamaru) or the catalytic qualities of uranium, lost out to military priorities, namely the scientific basis for gas warfare and gas protection. For instance, Haber's friend Richard Willstätter developed, at Haber's request, the respiratory filter for gas masks at the neighboring Chemistry Institute. In the end the military research resulted in the production and use of chemical weapons, in order to put an end to the trench warfare on the western front. In 1915 Haber personally directed the first major use near Ypern. In addition, he was, assisted by Albrecht Hase, leading in the development of new methods for pest control, amongst others in gassing grain magazines and other food storage areas for the troops to prevent parasites.
In 1916, the Koppel Foundation agreed to turn over direction of the Institute – now given the new title "Royal Prussian Kaiser Wilhelm Institute for Physical Chemistry and Electrochemistry" – entirely to the military, particularly since it was already completely funded by the government. The rooms were enlarged by barrack-like structures and the staff increased to almost 150 scientists by the end of the war (amongst others Ferdinand Flury, James Franck, Herbert Freundlich, Reginald Oliver Herzog, Fritz Kerschbaum, Hans Pick, O. Poppenberg, Erich Regener, Wilhelm Steinkopf, Heinrich Wieland) in ten departments with more than 2,000 assistants for the purpose of satisfying all the experiments with weapons as well as their production (in a factory in Warschauer Straße). Neighboring institutes had to put up with their rooms being requisitioned. Haber was made a captain by appointment of the Kaiser, jumping the usual order of promotion from "Vizewachmeister" (corporal), because the War Ministry, where Haber – at the instigation of Walther Rathenau – had taken over the Chemistry Section in the Raw Materials Department, did not want to make Haber, a Jew (albeit baptized), an officer. Haber's hope

91. Fritz Haber

that the use of poison gas would shorten the length of the war and thus save many lives, turned out to have been a bitter disappointment (as he once admitted to Otto Hahn during a conversation at the Hague Convention). Despite the Allies' accusations of "war crimes" toward Haber, which even caused him to (successfully) seek citizenship in St. Moritz in Switzerland, his efforts to ensure human life through "Bread from the Air," did,

however, earn him international recognition in 1919 when he was awarded of the 1918 Nobel Prize for Chemistry. The prize was awarded for his synthesis of ammonia in 1908 and the Haber-Bosch procedure for the production of fertilizers, the importance of which for feeding the world has not diminished even today. The laudatio read in Stockholm recognized that the award was for Haber's solution to the problem of "directly combining nitrogen in air with hydrogen" with which he had "created a means of improving agriculture and prosperity" (A. G. Elkstrand).

After the war the institute was monitored by an inter-allied military commission and demilitarized. The commission also tore down the many barracks which had been erected. The Treaty of Versailles prevented Haber from pursuing further research on gas warfare or, at least, within the territory of the German Reich. But even the peaceful application of the knowledge attained in this field during the war resulting in improved pest control (by Albrecht Hase, now at the Biologische Reichsanstalt (Reich's Biological Institute)) or in the development of pharmaceutical preparations (by Paul Friedlaender, Ferdinand Flury) could no longer be pursued at the institute, as both of these departments were closed in 1920 due to inflation. The department for textile research established in 1919 (Reginald Oliver Herzog) became independent the following year, as the Kaiser Wilhelm Institute for Fiber Chemistry. The institute withdrew from applied research and returned to basic research. Three departments remained, Haber's own department for physical chemistry, one for colloid chemistry from his deputy Herbert Freundlich (1880–1941), who was one of the founders of this discipline and had become renowned for his textbook "Capillary Chemistry", and one for atomic physics headed by James Franck (1882–1964), who was working on the experimental proof of Bohr's atomic model, for which he received the Nobel Prize together with Gustav Hertz in 1925. When Franck was appointed to the University of Göttingen in 1920, the physicist Rudolf Ladenburg (1882–1952) took over the department from 1924 to 1932 (with work on the dispersion of electrically excited gases and vapors and the magnetic rotation of the polarization plane) which was then closed when he took up an appointment in Princeton in 1932. In 1923, an additional, very innovative department for physical chemistry was set up for Michael Polanyi (1891–1976) who returned from the Fiber Chemistry Institute to work on, amongst other things, problems in the field of crystal physics, luminescence, reaction kinetics and polymerization.

The assets of the Koppel Foundation were depleted by the hyper-inflation of the post-war years and the so-called Haber (Stipend) Fund which served as "the collection agency for payments Haber received from industry for personal services" (J. Jaenicke, 1961), could plug only the biggest gaps in the budget of the institute which had come under the administration of the Kaiser Wilhelm Society in 1923 so as to be able to continue its

92. Karl Friedrich Bonhoeffer

93. James Franck

94. Herbert Freundlich

95. Paul Friedlaender

96. Rudolf Ladenburg

97. Rudolf Mentzel

98. Michael Polanyi

99. Iwan N. Stranski

100. Peter Adolf Thießen

existence. In the post-war period and the period between the wars, Haber dedicated himself above all and very successfully to scientific-organizational tasks, founding the Notgemeinschaft der Deutschen Wissenschaft, the Scientific Council of the Kaiser Wilhelm Society and the Japan Institute. He did, however, pursue his own research in which his motivating "concerns for the fatherland" (J. Jaenicke, 1961) were apparent. For instance, he worked with Fritz Kerschbaum on the replacement of gasoline with acetylene and from 1922–1925 he worked on obtaining sufficient concentrations of gold from sea water by means of electrochemistry with the intention of assisting the Reich in paying reparations. Unfortunately, detailed analyses on various maritime expeditions demonstrated that it was not possible to do so at a profit. After 1925 Haber (with W. Zisch and Gerhard Just) turned his attention to the phenomenon of chemo-luminescence as well as gas kinetics and photochemistry.

In addition to the department heads and their staffs, a number of scientific guests such as Hans Beutler, Karl Friedrich Bonhoeffer, Ludwig Ebert, Henry Eyring, Adalbert und Ladislaus Farkas, Karl-Hermann Geib, Paul Goldfinger, Walter Grotrian, Paul Harteck, Hartmut Kallmann, Hans Kautsky, Paul Knipping, Hans Kopfermann, Fritz London, Eugen Rabinowitsch, Karl Söllner, Herta Sponer, Alexander Szabo, Eugen Wigner, Josef Weiß, Karl Weißenberg, Setsuru Tamaru and Hans Zocher performed research at the institute. In 1928, the laboratories were being used by ca. 50 scientists, both foreign and German, who worked side by side in cramped conditions. Only with the construction of the new X-ray building in 1937/38 was there some kind of relief from the crowded conditions. Germany's war-related isolation was overcome primarily as a result of Haber's work as the Kaiser Wilhelm Society's "foreign minister". His Colloquium, founded in 1919 and held on a bi-weekly basis became world famous, serving as a forum for new discoveries and inventions where even the two scientific mavericks Albert Einstein (1878–1955) and Max Planck (1858–1947) participated. At that time it was held in the tiny Dahlem lecture hall on the second floor of the institute (some of the seatings have been preserved in the Archives of the Max Planck Society), before it was moved to the larger Harnack House in 1929. (Abb. 101)

Looking back at these "golden" years between the wars, there is a scorecard of success which is reflected in some of the examples published in the institute's anniversary report in 1986. "Breakthroughs were achieved at the institute. Among them were, the meaning of pre-dissociation spectra by Bonhoeffer and Farkas (1928), the proof of negative dispersion in a neon-gas discharging tube as evidence of stimulated light emission – a prerequisite for the laser emission developed at a much later date – by Kopfermann and Ladenburg (1928), the production of pure parahydrogen at low temperature by Bonhoeffer and Harteck

101. Planting the Haber Linden in celebration of his 60th birthday on 2 December 1928. From left: Kurt Hess, Adolf Kühn, Hans Kopfermann, Max v. Laue, Friedrich Glum, Max Planck, Michael Polanyi, Hartmut Kallmann, Wilhelm Eitel, Otto Hahn, Rudolf Ladenburg, Mie?, Franz Juliusburger?, Karl Weißenberg, Lise Meitner, N. N. , Siegfried Guggenheimer, N. N. , N. N. , K. Coper, Paul Harteck, Karl Söllner, K. H. Quasebarth, N. N. , Wiegel, Ladislaus Farkas, Hans Albu, N. N. , Herbert Freundlich, N. N.

(1929), the quantum-mechanics description of the energy transfer between atomic systems by Kallmann and London (1929), the meaning of hyperfine-infrastructure of atomic spectra by Kopfermann (1931) and the sketching of the basic principle of a heavy ion linear accelerator by Kallmann (1933). The extraordinary work by Polanyi and his team in physical chemistry and by Freundlich and his staff in colloid and interface chemistry" must also be given consideration.

This period of success at the institute came to an end when Hitler took power, especially due to the fact that, of all the Kaiser Wilhelm Institutes, it had the most Jewish scientists threatened with dismissal. Even though Fritz Haber, as a veteran of the front in World War I, was exempt from the Law on the Restitution of the Civil Service, 12 of his 49 member staff were affected, including the department heads Polanyi and Freundlich. As a consequence, Haber submitted his resignation to the Prussian Ministry of Culture and Education in April 1933. Therein he stated: "My sense of tradition requires of me that, in the fulfillment of my scientific post, I only choose staff members according to their professional abilities and character, without regard to their racial composition. You will not expect of a man in the 65th year of his life that he change his way of thinking, one which has led him through the past 39 years of his university career. You will also understand that the pride with which he has served his native Germany throughout his life now requires him to request immediate retirement" (granted by the ministry on June 6, effective October 1, 1933). In letters to the President of the Kaiser Wilhelm Society, Polanyi and Freundlich took this step as well, thus preempting their dismissal; both of them emigrated to Great Britain. After Planck's futile personal appeal to Hitler on Haber's behalf and his instigation in 1935 of a memorial ceremony at the Harnack House for Haber, who had died in exile in January 1934 (see Harnack House), in June Planck appointed Otto Hahn (1879–1968) as interim director. This decision was declared invalid by the Ministry of Culture and Education, which then appointed August Gerhart Jander (1892–1961) from Göttingen to the post as of October 1933. But this temporary solution proved to be insupportable as well and Planck named K. F. Bonhoeffer, Arnold Eucken or Max Volmer as appropriate successors for Haber. The Ministry, however, rejected these candidates in favor of the colloid chemist Peter Adolf Thießen (1901–1990), whose party membership promised a trusting cooperation with the regime. The Senate of the Kaiser Wilhelm Society had no choice but to agree in May 1935. Indeed, under Thießen's leadership and that of the SS-member Rudolf Mentzel (1900–1987), who was a protégé of the Minister for Science Bernhard Rust, serving as head of a technical-chemical department (he later became "Amtschef" for Science in the Ministry of Culture and Education and Vice President of the Kaiser Wilhelm Society), the institute was not only awarded the "Gaudiplom" for

exceptional achievement, but also as of 1939 bore the title "National Socialist Model Enterprise".
Thießen largely restored the breadth of the institute's research, which Jander had reduced, and made it possible to continue basic research, despite the fulfillment of war-related government contracts. Thießen himself led a department for colloid chemistry, Ernst Jenckel a newly created department for general physical chemistry, which dealt with glasses and high polymers, August Winkel (and later Hans Witzmann) led the department for organic chemistry and Arthur Lüttringhaus (later Alfred Pongratz) the department for inorganic chemistry. Otto Kratky headed the department for fine structure research and Hans Caesar Stuhlmann one for textile research. In addition, a working group was established for macro-molecular chemistry under Kurt Ueberreiter and another for the physical chemistry of interface processes (subsequently becoming a department) under Theodor Schoon. The mathematician Bernhard Baude and the theoretical physicist Kurt Molière worked at the institute.
When the Second World War began, for the second time in its history, the institute was placed "completely under the aegis of the Army Administration," with all of the related consequences (secrecy, partial ban on publication) even if, for instance, Molière, Kratky or the Bulgarian Iwan N. Stranski from Breslau, who appointed as Scientific Member in 1943, could continue to pursue theoretical work on crystal growth and phase development at the institute. During the war, the institute "had to increasingly accommodate the desires for autarky present at the time by pursuing the goals set by the powers that be. This meant that concrete tasks had to be solved, for instance, in the synthetic materials industry, in lubricant technology, as well as in catalysis and absorption" (J. Jaenicke, 1961). Following significant improvements to the technical equipment of the institute after 1933, the facilities were enlarged in 1937/38 by the addition of the "X-ray building" on Van't-Hoff-Straße. Amazingly, the Kaiser Wilhelm Institute was spared heavy damage in the war, but in an air raid in 1943 it did lose its peaked roofs, which unfortunately to this day have not been restored. As a precautionary measure, a partial evacuation of the institute to the outskirts of Berlin (Falkenhagen, Arensdorf, Petershagen) was performed, beginning in September 1943.
At the end of the war, the facilities were initially dismantled in May and June of 1945 by Soviet troops and as of July 1 the institute was occupied by the Americans, in whose sector it was located. By the end of war, Thießen had already established contact with the communists. After having been appointed for a short period of time director of the "entire" Kaiser Wilhelm Society on May 12, 1945 by the mayor of Zehlendorf, he left in June, along with Ludwig Bewilogua (Kaiser Wilhelm Institute for Physics) and a few staff members for

102. View from the steeple of the Jesus Christus church of the Kaiser Wilhelm Institute for Physical Chemistry and Electrochemistry and its Director's villa (right foreground), in the background the so-called X-ray building (ca. 1939)

a ten-year stay in the Soviet Union. Decorated with the Stalin Medal, he returned to assume the directorship of the (East) Berlin Academy Institute for Physical Chemistry at Berlin-Adlershof and later assumed the chairmanship of the Research Council of the GDR.

Still remaining at Dahlem institute were Kurt Ueberreiter (1919–1989) as the interim director, Stranski, whose knowledge of the Russian language proved to be helpful when the institute was occupied by the Red Army, and Molière. Kallmann, Haber's former staff member and administrator of the institute, returned for a short while before he took an appointment in New York in 1948. They returned to their research to the extent that the circumstances allowed for such. Temporary the institute housed the University Institute for Physics (head: Christian Gerthsen), the Institute for Journalism (head: Emil Dovifat) as well as the Deutsche Chemische Gesellschaft (German Chemical Society; Maximilian

Pflücke) and a bookbindery.
Robert Havemann (1910–1982), who had been a scholarship student at the institute in 1932/33, but who, as a communist, had been imprisoned in Brandenburg during the Nazi era from 1943-1945, was named administrative director of the institute and its guest departments in July 1945 and later appointed by the Governing Mayor of Berlin to succeed Thießen as the Director of the Berlin Kaiser Wilhelm Institutes (with his office in the Kaiser Wilhelm Institute for Physics). He subsequently moved into the Haber Villa in Hittorfstraße, which proceeded to become the private epicenter of political discussions with his former comrades from the group "Neu Beginnen". Havemann was active in the management of the "Kulturbund zur demokratischen Erneuerung Deutschlands" (Cultural Federation for the Democratic Renewal of Germany), as well as in establishing the "Gesellschaft für die Opfer des Faschismus" (Society for the Victims of Fascism). In 1946 he led a commemorative ceremony in the institute on the anniversary of Haber's death and had the inscription replaced on the base of the Haber linden, it having been removed by the National Socialists. When the responsibility for the Berlin research institutions was transferred from the Allied Commanding Office respectively the Berlin Senate Administration to the individual commanding officers of the districts in autumn 1947, Havemann was dismissed as Director of the Kaiser Wilhelm Society by the US military government in January 1948. The reason given for his dismissal was that he – in violation of the Control Council Act 25 restrictions – "allowed, permitted and encouraged illicit research." Franz Arndt from the Göttingen General Administration took his place in July 1949 as provisional managing director. This notwithstanding Havemann remained head of the department of colloid chemistry and biomedicine in the Kaiser Wilhelm Institute in West Berlin, but also became a professor for physical chemistry at the Humboldt University in East Berlin, which had been reopened. Beginning in 1949 he served as a representative of the Kulturbundfraktion of the Volkskammer, which proclaimed the GDR in October 1949. He did not succeed in his attempt to be elected as a SED candidate (party member as of 1950) to the West Berlin Abgeordnetenhaus. However, when he wrote an article in "Neues Deutschland" on 5 February 1950 entitled "Truman's Big Thunder – What Science Says About the Hydrogen Bomb" explaining the function of the bomb, he was immediately dismissed from his office as head of the department by the Cultural City Councilman May. His colleague at the Humboldt University, Karl Friedrich Bonhoeffer (1899–1957), head of the department since April 1948 and Director of the Kaiser Wilhelm Institute since December, had to explain to him, "that it was counterintuitive to attack the policies of the occupational powers, on whom they were dependent, so mercilessly; after all they fund the scientific research". Even when K. Ueberreiter, I. Stranski,

Fritz Tödt, Ernst Ruska and Willy Lautsch pleaded that the dismissal be rescinded because it violated democratic principles, Havemann was ordered to stay off the premises and had to leave the institute due to anti-American propaganda.

The financing of the institute was provided initially by the Berlin Senate until in June of 1947 when, for the states within the US occupation zone and subsequently expanded to all the federal states, the German Research Academy (Deutsche Forschungshochschule) took over the sponsorship and financing which was inspired by Fritz Karsen as the head of the US "Education" department and Friedrich Glum (1891–1974) a former General Director of the Kaiser Wilhelm Society. This also explains the name "Academy" due to the fact that the "Education" department was interested in the institution, but not the "Research" department. Besides the institute, the Academy also included Otto Warburg's (1883–1970) Kaiser Wilhelm Institute for Cell Physiology and other remnants of the Kaiser Wilhelm Society because the Allies had intended to dissolve the Kaiser Wilhelm Society decrying it as a Nazi organization. Subsequent uncertainties during the Cold War evoked the need for a new institution.

Bonhoeffer accepted the office of Director of the Berlin "Kaiser Wilhelm Institute for Physical Chemistry and Electrochemistry and Guest Departments", of which he had already been a member as an hydrogen expert from 1924–1929, only under the condition that he would also be able to serve as the head of the Max Planck Institute for Physical Chemistry being planned in Göttingen (where the library already had been transferred). During his term in office the institute consisted of his own department for physical chemistry and the previously mentioned Havemann (till 1950) department for colloid chemistry and biochemical questions, Stranski's department (independent as of 1954) for structural investigations and growth of crystals, Ueberreiter's physical chemistry of high polymers, one led by Ruska dealing with electron-microscopy and Molière's working group for electron diffraction. In Bonhoeffer's department, Georg Manecke worked on biotechnological questions, producing new, immobilized enzymes coupled to high polymer matrices. In his working group, Klaus J. Vetter developed new methods for analyzing the kinetics of electrochemical reactions and investigated the passivity of metals towards corrosion. Even after the two were appointed professors for organic and physical chemistry, respectively, at the Free University of Berlin, as External Scientific Members of the institute they retained their working groups there. Erwin W. Müller worked in Stranski's large department, starting in 1947 and further developed the field electron microscope, which he had invented. In 1950 he received his own department, followed by an appointment in the USA in 1952. He did, however, remain associated with the institute as an External Scientific Member.

Bonhoeffer served his Berlin institute only until March of 1951, when the 71-year-old (!)

103. Max v. Laue at the dedication ceremony for the Fritz Haber plaque in his institute on 9 December 1952

104. Entrance with the original name, on the left the "factory building"

105. Post-war buildings; from the left: Lecture hall and library with administrative wing, Institute for Electron Microscopy

106. The former Institute for Electron Microscopy, redesigned and renovated in 2008, today housing the Department of Inorganic Chemistry

Nobel Prize winning physicist Max v. Laue (1879–1960) took his place; his personal integrity and international reputation playing a decisive role in the reconstruction and integration of the institute into the Max Planck Society. From the start of his tenure as director in April, he proposed the renaming of the institute to be the Fritz Haber Institute of the Max Planck Society, which the German Research Academy agreed to in February 1952, albeit with the appendage "in association with the German Research Academy" (the Max Planck Society approved the name change in July of the same year). Max von Laue celebrated the renaming as an act of reparation to Haber on December 9, on the occasion of his 84th birthday, with the unveiling of a commemorative plaque (by Richard Scheibe) in the stairwell of the institute. The inscription – from Laue's eulogy to Haber (1934) – reads: "Themistocles did not go down in history as being banned from the court of the Persian king, but as the victor of Salamis. Haber will go down in history as the brilliant inventor of the procedure for binding nitrogen to hydrogen, upon which the technique for collecting hydrogen from the atmosphere is based, and as the man, who thereby, as was said upon the occasion of the Nobel Prize award, created 'a very important method for improving agriculture and the life of people everywhere,' who created bread from the air and was triumphant 'in the service of his country and all of mankind'." When the insti-

tute was honored by a visit from the German President Theodor Heuß and the Governing Mayor of Berlin Ernst Reuter to reintegrate it, effective July 1, 1953, into the new (old) institution Kaiser Wilhelm /Max Planck Society, and the German Research Academy was dissolved, the appendage was dropped.
Through the efforts of Max von Laue and Ivan N. Stranski not only were war damages repaired in the years 1951–1959, but the technical facilities were also significantly improved with the addition of a new transformer station, an electrical experiment facility, which served to convert electricity and distribute electricity into any kind needed in the 125 laboratories, and the construction of a low temperature laboratory (with a helium-liquefaction plant with total recovery of the gas). The library had to be rebuilt after 1945, as the original books had been transferred to Göttingen and now formed the basis of the Otto Hahn Library there. Additional buildings were also necessary; von Laue was able to lay the cornerstones not only for a much needed building for the library, lecture hall and workshop, but also for an independent (sub-) Institute for Electron Microscopy for Ernst Ruska (1906–1988) at Van't Hoff-Straße 9. This building was completed – with the exception of the lecture hall – in the late summer of 1959 and dedicated in 1963 (see Ernst Ruska Building).
Besides his own department (theory of supra-conduction and X-ray interference, history of physics), during v. Laue's tenure the working groups of Georg Manecke and Klaus J. Vetter and the department of his deputy Stranski – now known as the "Father of crystal growth" (expanded to investigations of zeolite) – with the working groups of Immanuel Broser (phosphorescence phenomena in crystals, semi-conductor physics till 1985) and Ernst Ruska (as of 1957 director of his own (sub-) Institute for Electron Microscopy at the Fritz Haber, awarded the Nobel Prize for Physics in 1986) were established. In addition, the Ueberreiter department / Scientific Member 1954 (physical properties of polymers, vitreous and liquid state of macro-molecules) as well as the two new (1953) working groups of Gerhard Borrmann (1908-2006) / Scientific Member 1956 (X-ray optics, crystal growth, field emission) and Kurt Molière (1912–1994) / Scientific Member 1960 (electron diffraction) were set up. Only in 1960 was the department of von Laue's former assistant Rolf Hosemann (1912–1994) / Scientific Member 1966 (structural theory, X-ray diffraction phenomena with statistically disturbed order – so-called paracrystals) included.
When in March 1959, at the age of nearly 80, Max von Laue turned over the institute to Rudolf Brill, he could look back at an exceptionally successful tenure in both organizational and scientific respects. Brill led the institute for ten years during which period he investigated the properties of catalysts for heterogeneous reactions. On the institute grounds he supervised the gradual integration of the former Kaiser Wilhelm Institute for Silicate Research

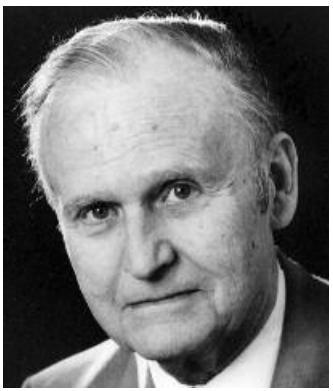
107. Gerhard Borrmann

108. Rudolf Brill

109. Heinz Gerischer

110. Rolf Hosemann

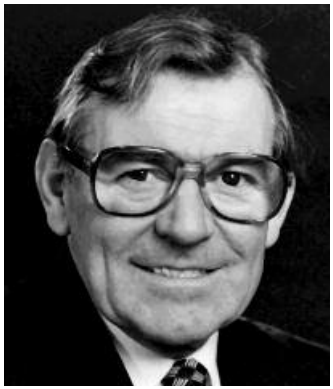
111. Kurt Molière



112. Kurt Ueberreiter

(Holzapfel field office, Micromorphology research center from J.-Gerhard Helmcke – dissolved as such in 1955, continued as a working group at the Institute for Electron Microscopy) at Faradayweg 16, joined by the departments of K. Ueberreiter and R. Hosemann and, as of 1966, the new department for kinetic processes on metal surfaces lead by Jochen H. Block (1929–1995), who became a Scientific Member in 1969.
In 1969 Heinz Gerischer (1919–1994), previously External Scientific Member of the Max Planck Institute for Metals Research in Stuttgart, succeeded R. Brill as director of the institute. His interest was in the electro-chemistry of metals and semi-conductors, whereby he included photochemical effects. Using the low temperature technology installed by von Laue at the institute, he investigated the transitions between atomic and solid state properties

more precisely by means of matrix-isolation spectroscopy. To protect high resolution electron microscopes from external vibrations, especially from passing subway trains, a new building was started in 1972, with the department moving in in 1974.
In an initial restructuring (1974) Gerischer shifted the focus of the institute's work to the research on "the processes in interfaces of solids in the ultra-high vacuum in contact with gases and fluids" (Die MPG u. ihre Institute, 1976). To that end all activities were merged in three sub-institutes. J. H. Block, H. Gerischer and K. Molière worked in the Institute for Physical Chemistry, R. Hosemann and K. Ueberreiter in the Institute for Structure Research and until 1974 E. Ruska and from 1976 Elmar Zeitler (born 1927) in the Institute for Electron Microscopy. In 1973 the Fritz Haber Institute had 61 researchers and 186 other employees.
A second restructuring (1980) became unavoidable upon the retirement of Hosemann, Molière and Ueberreiter. The entire institute received a collegial structure, joined by Alexander M. Bradshaw (born 1944) as Scientific Member in 1980. Nevertheless, H. Gerischer continued to manage the institute until his retirement (with the exception of the years 1983/85). As of 1981 the institute was (again) divided into the departments: Physical Chemistry (H. Gerischer), Electron Microscopy (E. Zeitler, until 1995), Interface Physics (J. H. Block, died 1995) and Surface Physics (A. M. Bradshaw). Its objective was to research the connection of structure, reactivity and dynamics of interfaces. In 1999, A. M. Bradshaw accepted the appointment as Scientific Director of the Max Planck Institute for Plasma Physics in Garching near Munich; the department's work ending in 2002. In addition, from 1981 to 1985 and for one year following the unexpected death of Ernst-Eckhard Koch (1988), Bradshaw served as Scientific Director of the BESSY Berlin Electron Storage Ring Company for Synchrotron Radiation. A joint computer center for the Fritz Haber and the Max Planck Institute for Molecular Genetics went into operation in 1987.
The Fritz Haber Institute, one of the two oldest Kaiser Wilhelm /Max Planck Institutes, still performs research in the areas where it worked when it was established. Today, however, they are "investigated using other theories and methods" (Die MPG u. ihre Institute, 1991). The institute is currently divided into five departments: Gerhard Ertl's (born 1936, Scientific Member and Director 1985-2004) Department of Physical Chemistry has dealt with, amongst other things following Gerischer's retirement in 1987, the dynamics of interactions of molecules and surfaces, the phenomena of non-linear dynamics in heterogeneous and biophysical processes, cluster and interface-chemical catalysts. He was awarded the Nobel Prize for Chemistry in 2007 for his chemical interpretation of the Haber-Bosch process. This meant that Ertl became the Institute's fifth Nobel Prize winner



113. Jochen H. Block

114. Alexander M. Bradshaw

115. Gerhard Ertl

116. Hans-Joachim Freund

117. Gerard Meijer

118. Matthias Scheffler

119. Robert Schlögl

120. Martin Wolf

121. Elmar Zeitler

following Haber, Franck, v. Laue and Ruska. Ertl's successor is Martin Wolf (born 1961 – professor of physics at the FU Berlin/Scientific Member and Director at the Institute since 2008) taking over the Department of Physical Chemistry (with a focus on ultra-short time spectroscopy). In the renamed Department of Inorganic Chemistry headed by Robert Schlögl (born 1954 – Scientific Member and Director at the Institute since 1994), the successor of E. Zeitler (retired 1995) works on subjects such as surface and interface reactions of organic solids, heterogeneous catalysis, carbon chemistry and the synthesis and characterization of metal oxide surfaces. Gerard Meijer (born 1962) was appointed Bradshaw's successor in 2002, heading a new Department of Molecular Physics after extensive reorganization. The focus of the Department of Theory headed by Matthias Scheffler (born 1951 – Scientific Member and Director at the Institute since 1988) is primarily electronic structure and energy calculations, parameter-free calculations of thermodynamic potentials and quantum chemistry and relativity theory, and surface crystallography. Hans-Joachim Freund (born 1951 – Director at the Institute and Scientific Member since 1995) succeeded Jochen Block (who died in July 1995) and set up the Department of Chemical Physics which deals with experimental surface physics, in particular with geometric and electronic structures of metal surfaces and oxides using electron microscopic methods, catalysis and photodesorption in molecular systems. In 1999 his department moved into a new building.

The large number of External Scientific Members at the Kaiser Wilhelm Institute (11) as well as the Max Planck Institute (13) demonstrates their efforts to establish and maintain national and international contacts as well as the high regard in which they are held in Germany and the world. The current External Scientific Members are Immanuel Broser, Sir Aaron Klug, Hans Jürgen Kreuzer, Dietrich Menzel, Joachim Sauer and Eberhard Umbach. This is also evident in the influx of scientific guests, the participation in cooperative research such as the nano-chemical concepts for a sustainable energy supply, cross-institute research initiatives such as "Triple M", the establishment of partner groups first in Dresden, then in Dalian, China (for the application of nanotechnologies in heterogeneous catalysis), the International Max Planck Research School for Complex Surfaces in Material Sciences (since 2003) and the appointment of a first Max Planck Fellow with guest status (2005).

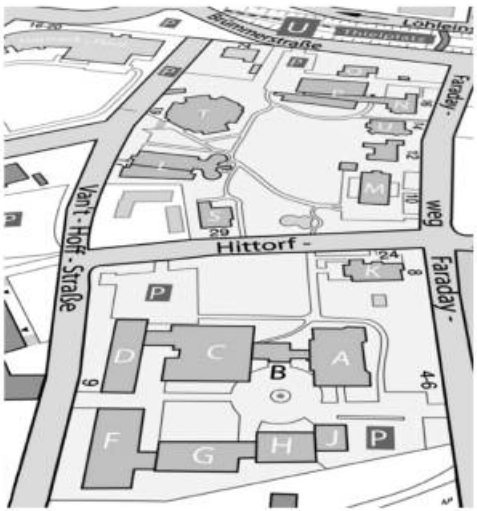
Success has been evident in many fields in the last few years. For instance, the functionality of the Ziegler-Natta auto-catalysts could be encrypted (2001), the process of chemical reactions perfectly controlled (by activation or suppression, 2003) by means of the scanning tunneling microscope (STM), the atomic structure of nano-particles or clusters explained (2004) or new, innovative soot filters developed (2006). And progress is being made on the

Fritz Haber Institute – new building for the Department of Chemical Physics 1999

122. Entrance

123. Backyard with old building of the former Kaiser Wilhelm Institute for Fiber Chemistry and Silicate Research in the background

pitting of stainless steel.
At the end of 2008 the institute had a staff of 255, 56 scientists, 52 researcher assistants, 40 funded employees and 58 guest scientists.



Fritz-Haber-Institut der Max-Planck-Gesellschaft

Wissenschaftliche Abteilungen:

Physikalische Chemie ***A***
Molekülphysik ***C, D***
Anorganische Chemie ***F***
Chemische Physik ***N, P, Q***
Theorie ***T, M***

Service-Einrichtungen:

Verwaltung ***G, H***
Bibliothek ***H***
Elektroniklabor ***L***
Werkstätten ***L, J***
PP&B Computer Support ***S***
GNZ Netzwerkzentrum ***T***
Haustechnik ***U***

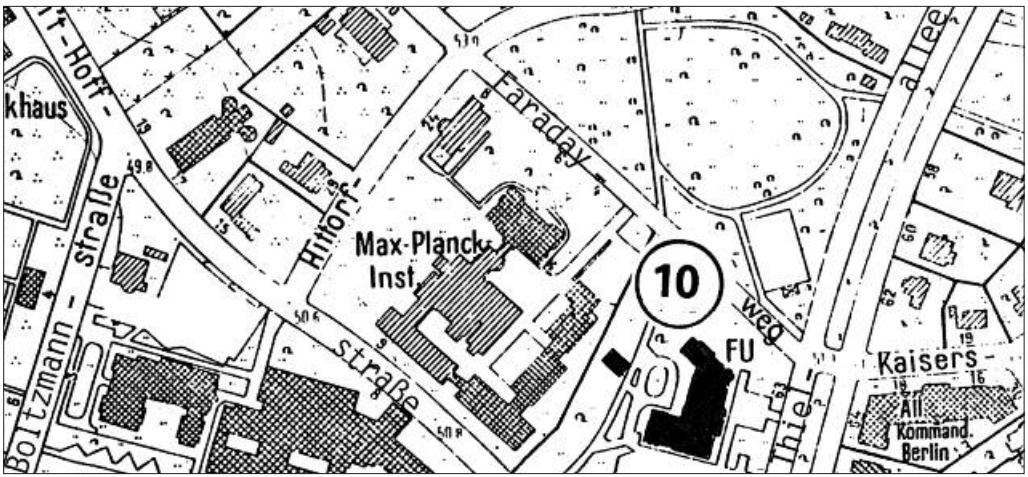
Für Besucher:

Haupteingang ***B***
Hörsaal ***H***
Seminarraum ***K, M, P***
Gästehaus ***U***

124. Layout of the Fritz Haber Institute

10. Kaiser Wilhelm Institute for Chemistry

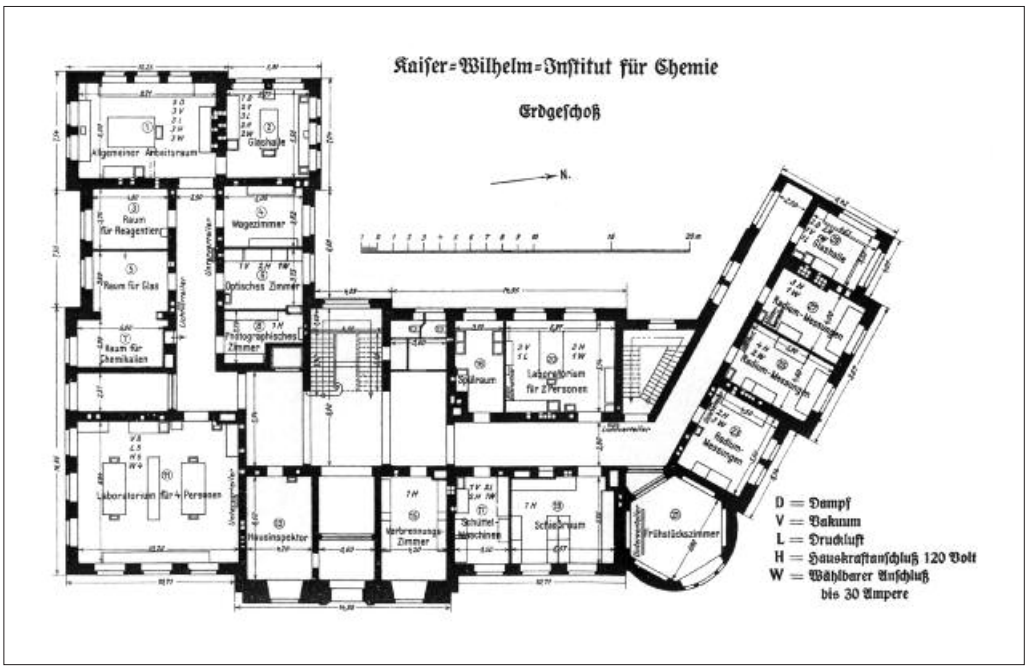
The walk leads from the Haber Linden back to Faradayweg which you follow until it enters Thielallee, past the little Radium House (in the background). At this corner (Thielallee 63) is the building of the Kaiser Wilhelm Institute for Chemistry, today the Otto Hahn Building of the Free University.



According to Emil Fischer's plans and those of other supporters like Walther Nernst and Carl Duisberg, a national chemical institute needed to be established as a central industrial research laboratory, along the lines of the Physikalisch-Technische Reichsanstalt (Imperial Institute of Physics and Technology), founded 1887. In view of the lack of the national government support – at best it could supply a small part of the operating funds and more likely serve only as the patron – these plans had to be dropped (they were partially followed as regards their applied or procedural aspects after 1914 in the Kaiser Wilhelm Institute for Coal Research in Mülheim/Ruhr).

Instead Harnack suggested, with Fischer's approval, in a 1909 letter to Kaiser Wilhelm II that the industrial funds (about one million marks) collected from the Verein Chemische Reichsanstalt (Society for a National Chemical Institute) be invested in an Institute, which now, however, should be dedicated to basic research, or as Harnack put it to "pure science".

125. Kaiser Wilhelm Institute for Chemistry with director's residence



126. Plan of the ground floor

With the Kaiser's approval, the Verein Chemische Reichsanstalt concluded a contract with the Kaiser Wilhelm Society in December 1911. This agreement called for the establishment and operation of a chemical research institute (changed 1921), as initiated by Althoff and to be called the "**Kaiser Wilhelm Institute for Chemistry**" and located in Dahlem. The "Prussification of the institute" (Nernst) had been completed, though in truth it was only half of the institute. The physical-chemical section, under the direction of Fritz Haber, was established as a separate Kaiser Wilhelm Institute for Physical Chemistry and Electrochemistry. The technical section of the institute (sketched in Ihne's plans as a "coach house") was canceled for financial reasons. In the end, quite a different institute was established. In April 1912, Ernst Otto Beckmann (1853–1923) from Leipzig was named Director of the Kaiser Wilhelm Institute for Chemistry. Though he had already passed the peak of his abilities, he was chosen on account of his varied talents as a chemist and pharmacist, his important methodological works, especially in the development of analytic procedures (determination of the molecular weight of materials in solution / "Beckmann Thermometer"), as well as his organizational skills.

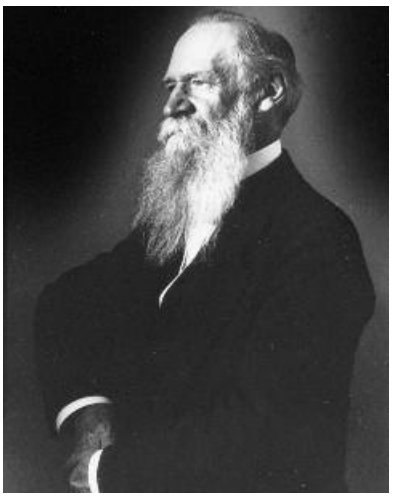
The Kaiser Wilhelm Institute for Chemistry at Thielallee 63, along with the neighboring Kaiser Wilhelm Institute for Physical Chemistry and Electrochemistry, was officially opened by the Kaiser on October 23, 1912. It was also built by court architect Ernst Eberhard v. Ihne with the interior architecture by Max Guth. The institute consisted of three independent departments, one for inorganic and physical chemistry (3rd story: Beckmann), one for organic chemistry (2nd story: Richard Willstätter) and one for radioactivity (ground floor), which in truth was divided into a chemical (Otto Hahn) and physical (Lise Meitner, as of October 1913) group. Organic chemist Carl Liebermann worked as a guest from April until his death in December 1914.

Despite being hindered by chemical warfare projects and reports, as well as the need to house people from Haber's institute, the institute managed to continue basic research during the First World War. The research was also hampered by Hahn's military and Meitner's (1915–1917) army-medical service.

Beckmann's department continued his previous work, but also worked on sulfur, selenium and tellurium, developed a sodium lamp for polarization and an analytical burner made of porcelain. During the war, industrial interests were of primary concern, especially due to the lack of raw materials and feed, which led to experiments aimed at the extraction of nutrients from straw and analyses of lignin. To improve the plant protein feed, Beckmann attempted to remove the bitter constituent from lupines. Dangerous self-experimentation (taste tests of the leaching solution) led to his illness and finally, in 1923, two years after his retirement, to his death.

127. Library of the Kaiser Wilhelm Institute for Chemistry: Ernst Beckmann, front left, Richard Willstätter middle front and Lise Meitner sitting in back, Otto Hahn standing at the shelf

128a. Bronze replica of the marble bust of Ernst Beckmann by Carl Seffner, 2nd storey



128b. Ernst Beckmann

Richard Willstätter joined the institute at the persuasion of Emil Fischer in October 1912. In Berlin, he continued his chemical analyses of the leaf pigments which he had commenced in Zurich at the Swiss Federal Institute of Technology. For his description of the structure of chlorophyll and the special importance of its central atom, magnesium, Willstätter was, in 1915, the first scientist of the new Kaiser Wilhelm Society to receive the Nobel Prize. Other work emanating from his department dealt with the assimilation of carbonic acid and led to a theory of photosynthesis. Furthermore, they led the way to fructose extraction from cellulose or wood by means of hydrolysis (saccharification of wood). Willstätter turned to an entirely new field with the investigation of flower, berry and root pigments before he left Berlin at the end of March 1916 to succeed his mentor Adolf von Baeyer in Munich. Willstätter was named an External Scientific Member of the Kaiser Wilhelm Institute for Chemistry in 1927.

129. Richard Willstätter

The inorganic chemist Alfred Stock (1876–1946) from the Technical College at Breslau took his place in April 1916. In 1921, he succeeded Beckmann as the director of the institute. During the First World War, Stock conducted research in connection with the "Kaiser Wilhelm Foundation for Armament Sciences" on the subjects of rust protection, irritants and smoke-producing substances. He gave special attention to the elements silicon and barium and, among other things was successful in extracting beryllium by means of electrolysis. The high-powered vacuum process which bears his name was also developed during his tenure in Dahlem. In 1926, already suffering seriously from nausea, loss of memory and other symptoms attributable to a case of mercury poisoning which he suffered during his work with the high-powered vacuum, he accepted a professorship in Karlsruhe. He was never able to fully recover from the affects of the mercury poisoning, but he did continue to do research on the hazards of this element. After his departure he was named an External Scientific Member of the Kaiser Wilhelm Institute for Chemistry, too.

In April 1921 an organic chemist, Kurt Hess (1888–1961), joined the staff as a Scientific Member and set up the newly formed department of cellulose chemistry. Hess dealt especially with the surface of plant cell walls and synthetic cellulose, but as well with glycogen, potato starch and inulin. After 1931, his department was financed by I.G. Farbenindustrie AG, but remained as a "visiting department" at the institute. Hess became an External

130. Alfred Stock

131. Kurt Hess

132. Josef Mattauch

Scientific Member.
In their initially small department (till 1920), Otto Hahn (1879–1968) and Lise Meitner (1878–1968) investigated radioactive conversion products and their emissions using chemical and physical methods. In their work they filled in gaps in the decay chain and investigated the age of geological layers using the rubidium-strontium method. One of their early successes, resulting from improved experimental and measuring methods, was the discovery of the chemical element "protactinium," the first member of the actinium row. Slowly, a double department for atomic chemistry and atomic physics of international stature developed out of the single department (till 1934). In the thirties, Arthur von Weinberg provided the funds for the "Radium Building" on the institute's property (so as to avoid radioactive contamination of the main building). "The discovery of 'nuclear isomerism' (the existence of isotopes with the same nuclear charge and atomic weight, but different radiation), research on the radioactive decay process and detection of 'pair emission' (the creation of a positron and an electron from high-energy gamma rays) were some of the extraordinary results which came out of the double department" (Reissig, 1992).
The most important discovery to come from this institute, of which Hahn was named interim director in 1926 and given the full title in 1928, still lay in the future: nuclear fission. Enrico Fermi, Irène Joliot-Curie and Frédéric Joliot, as well as Otto Hahn and Lise Meitner, had theorized that firing neutrons at the heaviest known element, uranium, would produce even heavier elements, so-called transuranic elements. When Otto Hahn

133. Otto Hahn

134. Fritz Straßmann

135. Lise Meitner

and his assistant, Fritz Straßmann (1902–1980), shot slow neutrons at uranium in December 1938 they were surprised that not radium – as expected – but barium was formed. A few weeks later they were able to detect the second product of fission, the noble gas, krypton. Hahn wrote Lise Meitner on December 28, 1938, "Is it possible that uranium explodes to form ba(rium) and lan(thanum)?...If that is true, then the transuranic elements are dead." Lise Meitner supplied the nuclear-physical solution to this "puzzle" in a letter. Following the annexation of Austria she became a "Reichs-Deutsche" and being a Jew, she had been forced to escape from Germany the previous summer. With "fission" she proposed a remote diagnosis from a foreign country, supported by her nephew, the physicist Otto Robert Frisch, who calculated the energy released when the uranium nucleus exploded. As early as 1939 Siegfried Flügge, a theoretic physicist at Hahn's institute, proposed that a "uranium machine" be built to capture the energy released by fission and transform it into utilizable power. Only in 1942 did Enrico Fermi succeed in creating a uranium reactor in which the first controlled chain reaction occurred.

In 1939, Josef Mattauch (1895–1976), 1941 Scientific Member, 1943 Vice Director of the Kaiser Wilhelm Institute for Chemistry, took on the direction of the newly established department for mass spectroscopy and atomic physics, for which a large wooden barracks was built on the property in 1943. With funds from the Reich's Ministry of Aviation and the Industry Bank, it was also possible in 1943 to build a solid structure ("Minerva") for two high-voltage plants, one for 1.2 million volts for neutron production and one for 3-5

Plaques at the former Kaiser Wilhelm Institute for Chemistry

136. Outside plaque

137. Inside plaque

138. Outside plaque for Meitner and Delbrück

million volts for producing energy-enhanced particle beams (like protons and deuterons). "The technical aspects of uranium fission increased the interest in developing a procedure for separating isotopes during the last war. This led to experiments for isotope enrichment through ion migration at the institute, and independently at the National Bureau of Standards in Washington. In 1944, Alfred Klemm (born in 1913, Scientific Member after 1958) succeeded in separating an isotope of silver which was electrolytically changed into dense silver iodide with the institute's mass spectrograph" (Mattauch, 1961). It was hardly possible to continue to use the plant, because the institute was severely damaged in bombing raids in February and March of 1944 and forced to relocate to Tailfingen/district of Balingen (southern Württemberg). There, Otto Hahn was arrested by the Allied Forces and with other members of the Kaiser Wilhelm Institute for Physics imprisoned in England (until January 1946). In Farmhall he learned that the first atomic bomb had been dropped on Hiroshima. There he was also informed that he had been awarded the Nobel Prize in Chemistry 1944 for his discovery of nuclear fission. He received his prize in

139. Back side of the institute with Minerva Building (left) after 1944 bombing

Stockholm in 1946.
The Kaiser Wilhelm Institute for Chemistry did not return to Berlin after the Second World War, but was established in 1949 in Mainz by Josef Mattauch and Fritz Straßmann as the Max Planck Institute for Chemistry. The latter was named Scientific Member in 1946 and in 1950 became the second director. Otto Hahn was elected President of the Kaiser Wilhelm / Max Planck Society in 1946, serving until 1960, so that he was no longer able to dedicate himself to the work of the institute. He did, however, remain a Scientific Member.
The Berlin institute building became the Otto Hahn Building of the Free University and today accommodates the biochemical department. In honor of the discovery of nuclear fission, a plaque was placed in the first floor of the building on December 17, 1956, at the behest of Max von Laue (a second plaque on the outside of the building came later; both were designed by Richard Scheibe). The plaque reads, "In this building, formerly the Kaiser Wilhelm Institute for Chemistry, Otto Hahn and Fritz Straßmann discovered nuclear fission in December 1938. This discovery opened new paths for the study of material and space and placed the energy of the atom's nucleus in the hands of mankind." In 1997 the Institute for Biochemistry at the Free University added the following plaque below the outside one, "Lise Meitner, co-discoverer of nuclear fission, worked in this building from 1913–1938, as did Max Delbrück, one of the pioneers of molecular genetics, assistant to Ms. Meitner, from 1932–1937".
The building houses two busts, that of Beckmann (by Carl Seffner, Leipzig, unveiled in December 1924) on the third floor, and a smaller one of Lise Meitner (by Emy Röder, 1959) on the fourth floor next to the auditorium bearing her name.

11. Hahn House / Einstein Apartment

From the Otto Hahn Building the tour leads to the somewhat distant residence of Otto Hahn. After crossing Thielallee, past the office of the President of the Free University of Berlin, from 1945 to 1990 the former Allied Command Building, previously the Heinrich Straumer Building of the Vereinigte Feuerversicherer, the path follows Kaiserswerther Straße across Habelschwerdter Allee to Schwendenerstraße, then Wichernstraße, Fliednerweg and then Reichensteiner Weg to the right. At the next corner is Otto-Hahn-Platz. On the other side of the square, at Altensteinstraße 48 is Hahn's former residence.

Otto Hahn (1879–1968) and his family did not live in the director's residence supplied by the Kaiser Wilhelm Institute for Chemistry. This house, located in Thielallee 63 was destroyed by bombs in 1944. Instead of taking residence in the director's house, the Hahn family lived in a ground floor apartment in Ladenbergstraße 5 from 1913–1929. Only in 1929 could he build his own home in Altensteinstraße, somewhat further away. Beside the small dwelling in the garden, where Hahn liked to withdraw to write his papers, the three-part plaque in the front yard, erected in 1982, should be mentioned. It shows Hahn's profile (by Eberhard Luttner) with the information "Otto Hahn, 1879–1968, professor of

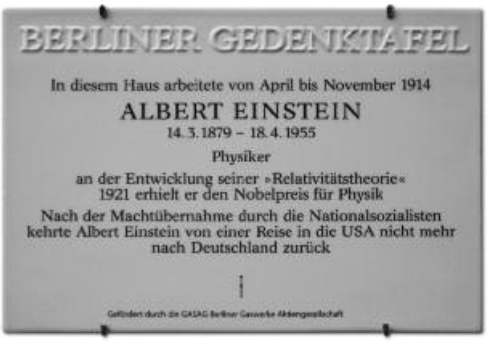
140a-b. Otto Hahn's home with plaque in front yard

chemistry, discoverer of nuclear fission, Nobel Prize recipient and honorary citizen of Berlin, resided here with his family from 1929 to 1944". The top plaque contains a quote from the Mainauer Declaration (1955) which Hahn was a signatory of, "Every nation must voluntarily choose to avoid force as the final instance of politics. If they are not prepared to do so they will cease to exist."
Today the Berlin Graduate School "Muslim Cultures and Societies" of the Department of History and Cultural Studies of the Free University is located in the Hahn residence.

*

From the Hahn House the tour continues across Otto-Hahn-Platz, past the Paulinum (Diakonisches Werk der Evangelischen Kirche), down Ehrenbergstraße, and then across Habelschwerdter Allee and Goßlerstraße, to the large apartment building no. 33 (right) at the corner of Rudeloffweg, where one of the two plaques commemorating Albert Einstein is located.

Albert Einstein (1879–1955) apparently came to Berlin as a result of Max Planck, to whom he owed the quick acceptance of the Theory of Special Relativity by the world of physics. His appointment as a research professor at the Prussian Academy of Sciences (1913) was also thanks to Planck's expert opinion. Planck even managed to arrange the funding for an eclipse expedition to southern Russia prior to the outbreak of World War I; it was intended to provide the experimental proof for the General Theory of Relativity showing that light from fixed stars is deflected at the corona of the sun, but was postponed due to the war.
Einstein arrived in Dahlem, which at that time had not yet been incorporated by Berlin, in 1914 and was given an office in the Kaiser Wilhelm Institute for Physical Chemistry and Electrochemistry in Faradayweg headed by Haber. Due to the fact that the apartment selected by his first wife Mileva, maiden name Marić (1875–1948) had not yet been completed, he first lived for a few days with his Uncle Jakob in Wilmersdorfer Straße 93 before he moved into Ehrenbergstraße 33 in mid-April 1914. His wife and children Hans Albert and Eduard came a few days later, but only stayed until the end of July. Amongst other things, Einstein's relationship to his Berlin cousin Elsa Löwenthal, maiden name Einstein (1876–1936), who later became his second wife, caused discord and Mileva returned to Zurich with the children.
But before early December 1914 when Einstein gave up the apartment which had become too large for him and moved to Haberlandstraße 5, he tried to formulate and publish the "formal basis of the General Theory of Relativity" describing the interaction of the theory of gravity with other forces. In addition, together with Georg Friedrich Nicolai and



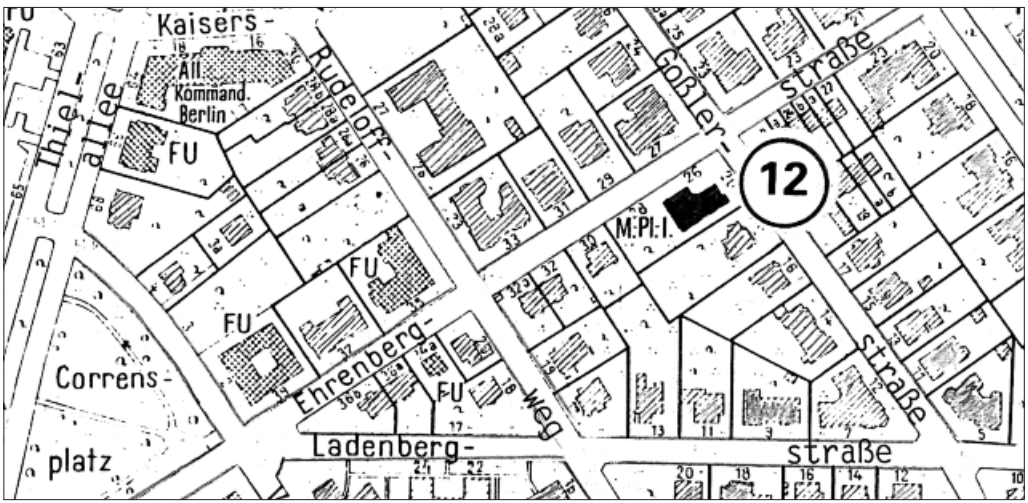
141a-b. Plaques for Albert Einstein (first and second version, 2006 and 2008 respectively), Ehrenbergstraße 33

142. Albert Einstein (ca. 1913)

Wilhelm Foerster he responded with a pacifistic "Appeal to the Europeans" to the more renowned 93 authors of "To the cultural world". For that reason the Zehlendorf Historical Society mounted a cast iron plaque on Ehrenbergstraße 33 in October 2005 which mentioned this important, if ineffective appeal. Unfortunately, three years later it was replaced by a "Berliner Gedenktafel" (Berlin commemorative plaque) made of KPM porcelain – next to the plaque for Sebastian Haffner – which fails to mention the three-man appeal that antedated the idea of a "European bond". On the contrary, the new plaque incorrectly states that Einstein did not return from a trip to the USA after the "National Socialists came to power". He had already left the country on 7 December 1932, prior to the National Socialists' coming to power. It is correct that he never again returned to Germany.

12. German Entomological Institute of the Kaiser Wilhelm Society / Max Planck Institute for Comparative Hereditary Biology and Hereditary Pathology

From Einstein's apartment building at Ehrenbergstraße 33 take a few short steps back to the property at the corner of Goßlerstraße 20 / Ehrenbergstraße 26–28. Here you will find a red-brick building with a round stairwell. Today it houses the East Asian Seminar (Japanology/ Sinology) of the Department of History and Cultural Sciences of the Free University. Originally it was built for the German Entomological Museum.



The Berlin entomologist Gustav Kraatz (1831–1909) and the city of Berlin founded the German National Entomological Museum in 1886 to house Kraatz's extensive insect collection and entomological library. It had originally been intended to form a special section of the "Märkisches Museum". However, the museum's new building lacked the space and the collection continued to be temporarily housed. Shortly before his death, Kraatz purchased the property at Goßlerstraße 20 and the Berlin Architect Heinrich Straumer designed a building for the Entomological Museum. The dark-red brick, gray shingles and

143. Walther Horn

144. Hans Sachtleben

white window frames were a conscious effort to imitate Dutch buildings. A second wing was intended, but never built.

Walther Horn (1871–1939), Kraatz's assistant for many years, was, in accordance with Kraatz's will, named director for life. Horn founded the journals "Entomologische Mitteilungen" and "Supplementa Entomologica," which, in addition to publishing scientific articles, primarily served to expand the museum's library through international correspondence and reviews without straining the budget (in 1928, for example; 75% of the publications were acquired in this manner). The collapse of international relations as a result of the First World War and inflation caused the museum considerable difficulties. Horn changed the emphasis from the extensive catalogue of insects to the library and research projects, especially in the field of insect metamorphosis and applied entomology, as underlined by the change in name to "German Entomological Institute" in 1920. When the Reich's Ministry for Food and Agriculture was unable to take over the institute due to inflation, he kept it going with his personal assets until the Kaiser Wilhelm Society includ-

145. German Entomological Institute of the Kaiser Wilhelm Society, later (Max Planck) Institute for Comparative Hereditary Biology and Hereditary Pathology

ed it in its group of institutes in October 1922 with the title **German Entomological Museum of the Kaiser Wilhelm Society** (as of 1926 unofficially and 1929/30 officially an "Institute"). The Society did not, however, enter into any further financial obligations. The Ministry for Food and Agriculture, which had participated in its funding since of 1925, guaranteed the institute permanent funding through a consortium formed from itself and the Reich's Biological Institute (Biologische Reichsanstalt) in 1934. This consortium also financed three journals produced by the institute, which made possible further expansion of the library through exchange. The institute in return published the three journals, which also contained the entomological work of the Reich's Biological Institute. The institute also supplied the Reich's Biological Institute and government offices involved in plant protection with "all the documents in systematic and bibliographic entomology needed for their work in the field of applied entomology" (KWG-Handbuch, 1936). This also included the loaning of insect preparations and in cases of doubt, made decisions for the German

Customs concerning quarantine services for plants. In addition, the institute continued to supply interested parties throughout the world with information about entomological collections, pictures, biographies and bibliographies, scientific terminology, publications, journals and addresses of entomologists, institutes and societies, for which lists and special catalogues were kept, and loaned out preparations. To accomplish all these tasks, Horn had, in 1935, a staff consisting of one assistant and one research assistant, 5 employees and two part-time helpers. The staff of the Reich's Biological Institute group, among them Hans Sachtleben (1893–1967) also worked in the institute.
Walther Horn died shortly before the outbreak of World War Two on July 10, 1939. His successor, Hans Sachtleben served as interim director until October 1943. Under his direction, the institute was relocated to Castle Blücherhof near Waren, Mecklenburg in August 1943, shortly before the institute's building in Dahlem was slightly damaged by bombs.
Sachtleben and his institute did not return to Berlin after the end of the war. First it was taken over by the German Central Administration for Agriculture and Forestry in the Soviet zone and then, as an independent institute with its headquarters in Berlin-Friedrichshagen, later in Eberswalde-Finow, affiliated with the newly established Academy of Agricultural Sciences of the German Democratic Republic. Since 1 January 2000 it belongs to the Leibniz-Zentrum für Agrarlandschaftsforschung e.V. (ZALF) as member of the Wissenschaftsgemeinschaft G. W. Leibniz (WGL, former "Blue List") in Müncheberg, where it has been located since 2004 on the property of the former Kaiser Wilhelm Institute for Plant Breeding Research.

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Because the building of the Kaiser Wilhelm Institute for Silicate Research at Faradayweg 16 was not being completely used by the Holzapfel department, Hans Nachtsheim's (1890–1979) department for experimental genetic pathology of the Kaiser Wilhelm Institute for Anthropology, Human Genetics and Eugenics was also temporarily housed there, after its building had been appropriated by the Americans. On January 1, 1947 it became a part of the German Academy of Sciences in East Berlin, but remained in Dahlem. A planned move to Berlin-Buch never took place; only Nachtsheim's employee Herbert Lüers (1910–1978), who had previously worked in the genetic department of the Kaiser Wilhelm Institute for Brain Research under Nikolaj Timoféeff-Ressovsky, remained there until the end of 1953. Nachtsheim soon ran into political difficulties when he refused to accept the genetic theory professed by Trofim Lyssenko, and favored by Stalin, that acquired characteristics can be inherited. He therefore surrendered his professorship at the Berlin University and took a position at the newly founded Free University. In early

146. Hans Nachtsheim

147. Fritz Kaudewitz

1949, his institute was included in the German Research Academy, which was the successor for the Berlin Kaiser Wilhelm Institutes.
From its temporary quarters in Faradayweg, the institute moved into the unused building of the German Entomological Institute of the Kaiser Wilhelm Society in Ehrenbergstraße 26–28 (previously Goßlerstraße 20) in April 1950. The Free University Department of Genetics, which Nachtsheim also led, was housed here as well. With the dissolution of the German Research Academy and the assimilation of the Dahlem Kaiser Wilhelm Institutes into the Max Planck Society in 1953, the institute was renamed **Max Planck Institute for Comparative Hereditary Biology and Hereditary Pathology**, Else Knake's Institute for Tissue Research in Garystraße 9 was attached administratively.
The institute worked in the fields of mammal and human genetics. Nachtsheim did research in the field of hereditary diseases of the nervous system (epilepsy), senses, skin, bone and circulation (Pelger anomalies of the blood) in rabbits and attempted to draw analogies to human hereditary disease. The department for human genetics, established for Friedrich Vogel in 1953, investigated the mutability of some characteristics, for instance, optic

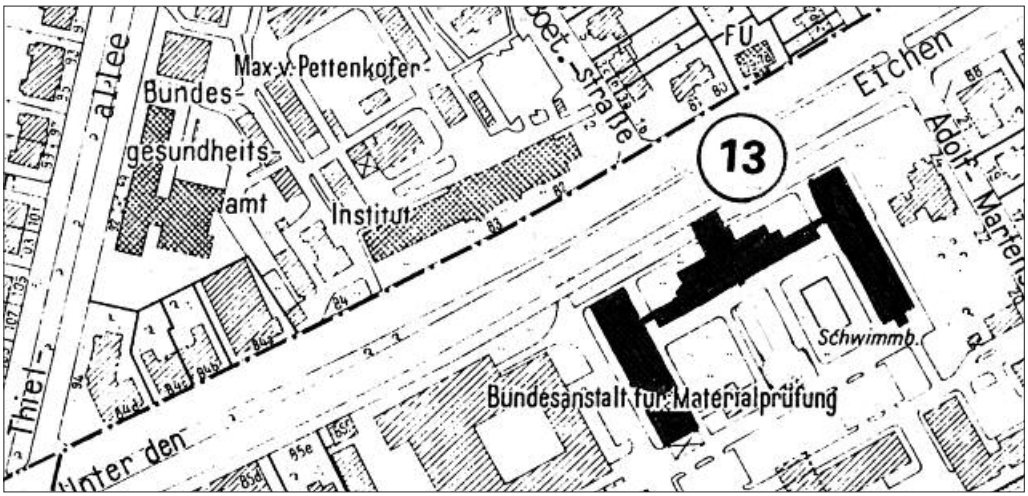
tumors, ABO blood groups on the basis of studies conducted in several German states, and questions dealing with the genetic-physiologic variability of humans. Until 1955 Walther Harm, and from 1955 to 1960 Wolfgang Laskowski, conducted radiation genetic studies on yeast.

Herbert Lüers, whose department was initially in Berlin-Buch, also moved into the Dahlem building in 1954 and investigated the mutating effect and the specific mechanism of action of mitosis toxin and cytostatics (used in cancer treatment) and the resistance to the contact insecticide DDT in fruit flies (Drosophila melanogaster). Upon Hans Nachtsheim's retirement in the following year, he assumed his chair at the Free University and moved the University Department of Genetics to Rudeloffweg 9 in the vicinity, so that the building at Ehrenbergstraße housed only the Max Planck Institute. In June 1960, Nachtsheim also retired as director of the institute, but remained interim director until the post was assumed by Fritz Kaudewitz (1921–2001) from the Max Planck Institute for Virology in November. Kaudewitz also directed the new department for microbial genetics. In 1964, however, Kaudewitz assumed a professorship for genetics at the University of Munich and left the institute in 1965.

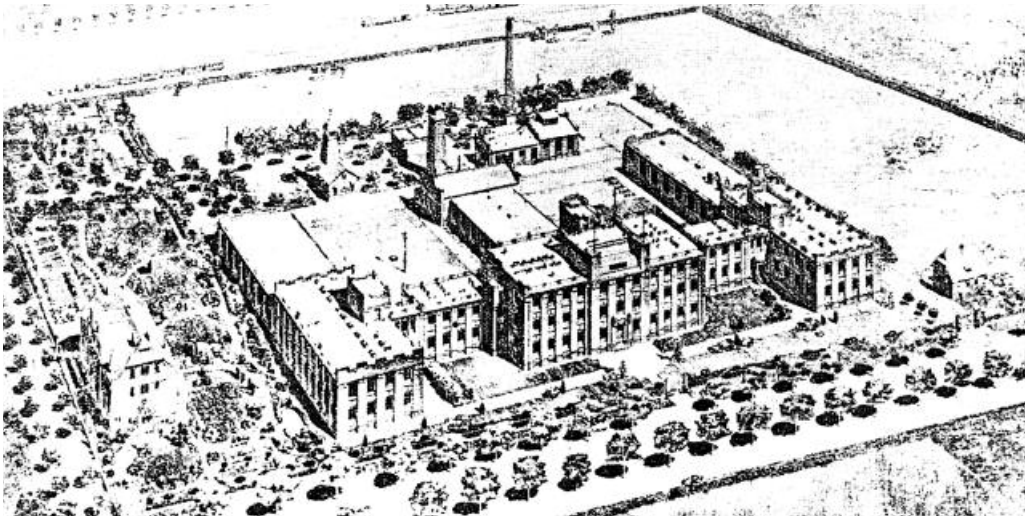
This then led to a reorientation and restructuring of the institute. Due to the fact that mammalian genetics were viewed as being outdated at that time, and the future of genetics was held to be in molecular genetics, the Senate of the Max Planck Society renamed the institute the "Max Planck Institute for Molecular Genetics" (see corresponding section) in December 1963.

13. Kaiser Wilhelm Institute for Metals Research

The tour now leads from the former Entomological Institute across Ehrenbergstraße toward the west to Corrensplatz (August von Wassermann-Platz until 1934), where the former Prussian State Institute for Water Hygiene (1913) was located (until today Federal Environmental Agency, Building I). From here, turn left onto Von-Laue-Straße which leads to Unter den Eichen. Diagonally across the street to the right is the main building of the Federal Institute for Materials Research and Testing (BAM) at Unter den Eichen 67. The former Royal Testing Office was built by Max Guth between 1902 and 1904 and accommodated the Kaiser Wilhelm Institute for Metals Research from 1923–1933.



The plan to establish an institute for metals research with the Kaiser Wilhelm Society – the practical advantages for transportation, machinery and electromechanics were obvious – existed before the First World War, but were delayed as a result of the war. Only in 1920, with the aid of the iron and steel industry and various ministries, was it possible to implement the plan. On May 11, the President of the Kaiser Wilhelm Institute was authorized to lease the property and buildings of the Centralstelle für wissenschaftlich-technische Untersuchungen (Center of Scientific-Technical Investigations) on the former Eule manor



148. Material Testing Office, where the Kaiser Wilhelm Institute for Metals Research was located from 1923–1933

149. X-ray laboratory and machine building for solidity testing at the Kaiser Wilhelm Institute for Metals Research on the Material Testing Office property

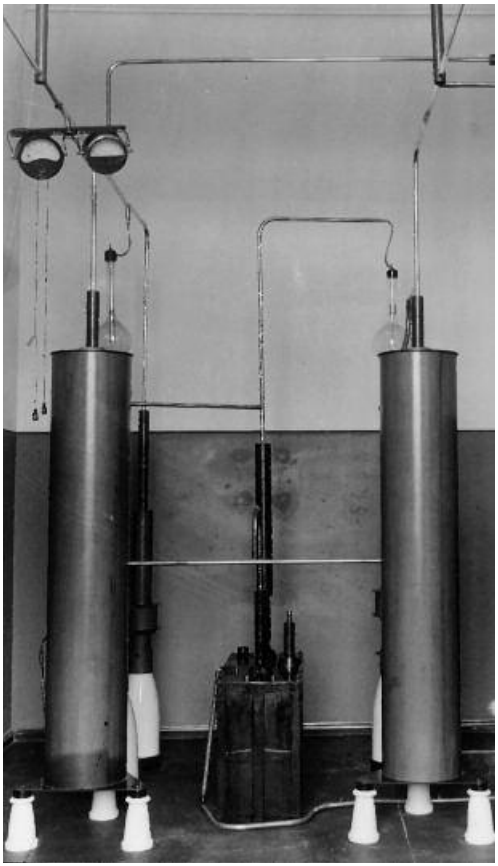
150. Emil Heyn

151. Wichard v. Moellendorff

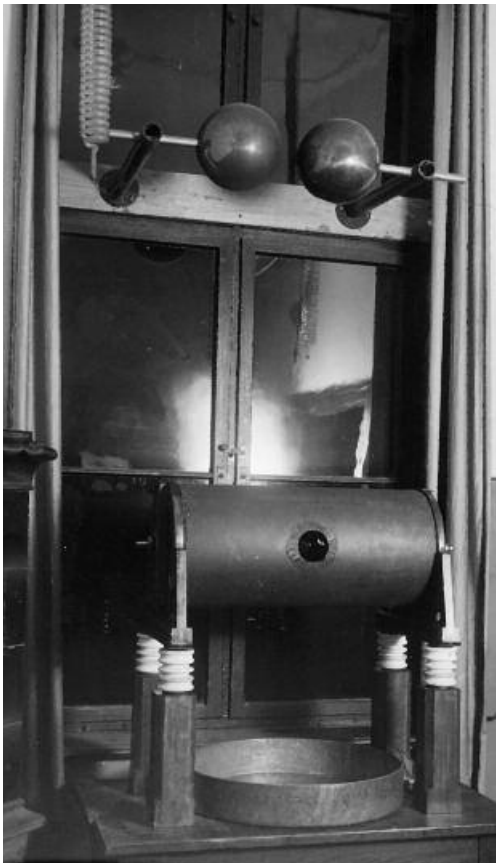
152. Oswald Bauer

in Neubabelsberg for the purpose of establishing the institute. The Center was being threatened with closure for having previously produced explosives. The **Kaiser Wilhelm Institute for Metals Research** was founded on July 10, but the opening ceremony was held a year later in December 1921. As Chairman of the Administrative Council, Alfred Merton pointed out on that occasion, "it will only be possible to fulfill the tasks of the institute, which are tasks of national interest, if all of those interested in a strong metal industry and sustainable development of metal production and processing techniques cooperate." The metallurgist Emil Heyn (born 1867), who had been employed at the Royal Testing Office until 1917, was named director, but died on March 1, 1922 so that Victor Tafel became the interim director. In April 1923, Oswald Bauer (1876–1936) – department head at the Testing Office – became a Scientific Member and vice director of the Kaiser Wilhelm Institute for Metals Research. He is responsible for the relocation (due to the inflationary crisis) of the institute from Neubabelsberg to the National Testing Office in Dahlem. The office's President, Wichard von Moellendorff (1881–1937) also served as the Director of the Kaiser Wilhelm Institute until March 1929 (on leave as of 1928). For all intents and purposes, Oswald Bauer assumed leadership of the institute, becoming interim director in 1931.

The institute, which was active in the field of non-ferrous metals – a little-appreciated field at the time – had three departments for the extraction and purification of ore (metallurgy), analysis of the properties or technological processing of metals and their alloys through molding, forging, stamping, milling, etc. (metallography) and corrosion research (metal



153. Transformer with heat valve and condenser



154. High-power vacuum tube with leaden protective casing

chemistry). In addition, X-ray – and for the first time "non-destructive" – investigations had already been planned in Neubabelsberg. With the move to Dahlem, however, the institute's structure changed. The metallurgy and chemical-analytical department were disbanded, because there were already groups covering this ground at the Testing Office. The metallography department was located in the rooms of the Metallurgy Department of the National Testing Office, originally headed by Oswald Bauer, whose other duties soon made it necessary that Max Hansen be named a department head in his own right. This department was affiliated with the laboratories for corrosion research (1925–31) under

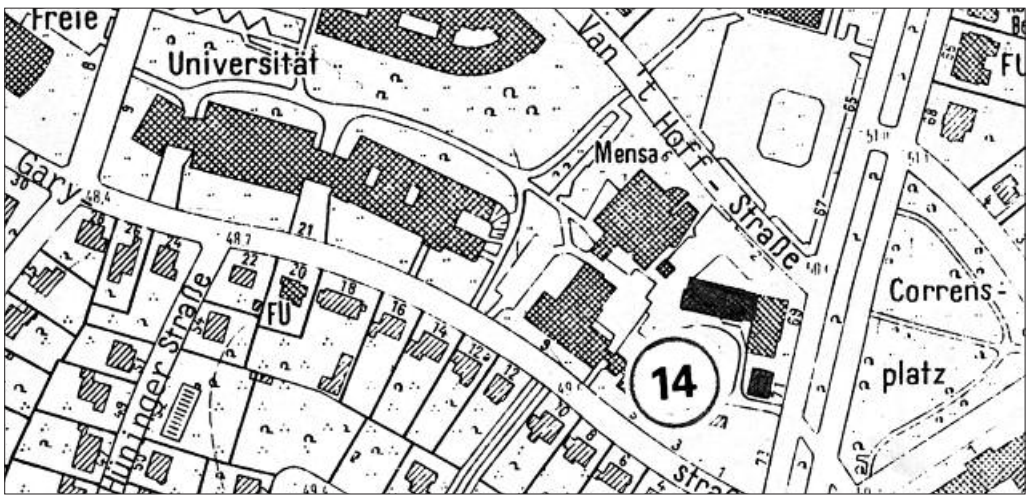
Werner Morell and molding questions (1927) under Paul Zunker. The X-ray equipment brought from Neubabelsberg was given its own building, in which the machinery for solidity tests was also accommodated. Ernst Schiebold (later at the University of Leipzig) developed his own X-ray laboratory in which structural investigations on monocrystalline materials were conducted using the von Laue method. These experiments were later expanded by Georg Sachs, starting in 1926. In 1930, a physical department was established for all three laboratories under the direction of Erich Schmid and, after his appointment to the University of Fribourg / Switzerland, Gunter Wassermann. In 1932 Sachs, Schmid and Schiebold were named External Scientific Members of the Kaiser Wilhelm Institute for Metals Research, in honor of their service in the field of metals research. In the final years of its existence, from 1929–1933, Karl Weißenberg, Scientific Member at the Kaiser Wilhelm Institute for Physics, also worked at the institute.

When the economy became weaker and the Committee of the German Metal Industry could no longer guarantee the funding of the institute, the Senate of the Kaiser Wilhelm Society put into action a plan that had been drawn up in 1930 to reestablish the institute elsewhere, on a different basis. In the twelve years it existed, the institute produced about 220 scientific papers, but it still had to close its doors in September 1933. The Kaiser Wilhelm Society did succeed in convincing the non-ferric industry to provide more support for the institute. The negotiations led to the decision in mid–1933 to transfer the institute to Stuttgart, where "a group of researchers at the Technical College were already studying properties and fundamentals, in particular of the metallic state ... In addition there was the desire of the State of Württemberg and the City of Stuttgart to house a Kaiser Wilhelm Institute there" (Köster, 1961). Following the move in March 1934, the institute celebrated a reopening under the direction of Werner Köster (1896–1989), celebrated in the framework of the General Assembly of the Kaiser Wilhelm Society on July 24, 1935.

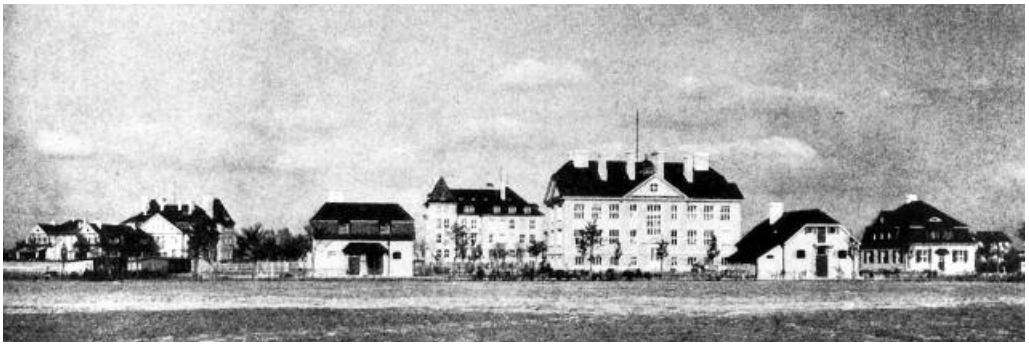
The most important objective of the Kaiser Wilhelm Institute for Metals Research, even in its Berlin period, was not only the study of transformations, but also the alloying of non-metals. The institute also made important contributions in the field of analysis of fissures and breaks (dependent on time, pressure, temperature, etc.) and in the definition of intermetallic phases (solidification of melted metals) and in the field of solid-state physics, for which it performed important basic research.

14. Kaiser Wilhelm Institute for Experimental Therapy / Kaiser Wilhelm Institute for Biochemistry

After crossing Unter den Eichen the route now heads into Boetticherstraße (across from the Federal Institute for Materials Research and Testing), where the former bacteriology department of the Royal Health Office, later Federal Health Office and since 2002 Federal Institute for Risk Assessment, moved into several buildings on the left-hand side in 1906. Boetticherstraße leads back to Corrensplatz which you leave to the right and cross Thielallee. Between the BEWAG substation of a remote heating system and the low auditorium of the former Pharmacological Institute of the Free University there is a small, older house with a slate roof. It belongs to the large building on the right, behind it. This building, which is hidden by large trees and can hardly be seen from the street, was formerly the Kaiser Wilhelm Institute for Experimental Therapy today Institute for Occupational Medicine of the Charité.



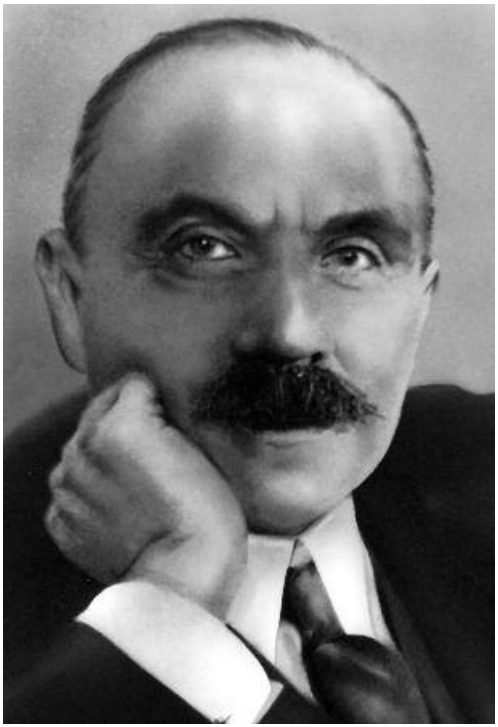
The Prussian Minister of Culture and Education, August von Trott zu Solz, called a meeting in January 1912 to establish a biological institute (pg. 33). At this meeting Nobel Prize winner Paul Ehrlich (1854–1915) and his student, immunologist August von Wassermann (1866–1925), made an urgent plea to establish an institute for experimental therapy, a



155. Kaiser Wilhelm Institute for Experimental Therapy viewed from Garystraße, from left, stables, Kaiser Wilhelm Institute for Chemistry (in background), main building, special stalls, guesthouse and gatehouse with apartments for assistants

field of research between medicine and chemistry. Unlike the Kaiser Wilhelm Institute for Biology, where the definition of its scientific objectives required a long decision-making process, the Senate of the Kaiser Wilhelm Society was able to make a speedy decision in the case of the **Kaiser Wilhelm Institute for Experimental Therapy** in March of 1912. The institute was placed under the direction of Wassermann and was to have been located next to the Kaiser Wilhelm Institute for Chemistry which was under construction. However, the Dahlem Committee responsible for the use of property feared that the neighbors might be disturbed by the institute's operations. Only after Ehrlich, who was a member of the institute's supervisory board, managed to dispel these fears, was the neighboring property facing Garystraße (at that time still called Straße 6) in Thielallee 69–73 approved for the construction of a three-story building, a gatehouse with apartments for assistants and two stables. The institute, which was now the third of the Kaiser Wilhelm Society, but the first biological-medical institute, was again built by Ihne and Guth and completed after a construction time of only seven months. It was opened in a ceremony during the second General Assembly on October 28, 1913 by Kaiser Wilhelm II.

Director August von Wassermann had until then been a department head in Robert Koch's Institute for Infectious Diseases and a professor for experimental therapy and immunology at the Berlin University. At his Kaiser Wilhelm Institute for Experimental Therapy he dealt with methodology and therapeutic problems of infectious diseases, especially syphilis and its serologic detection (Wassermann's Reaction) as well as trypanosomes and the serodiagnosis of active tuberculosis (with Felix Klopstock), which, however, was unsuccessful. In addition, Wassermann was interested in the chemotherapeutic treatment of malignant



156. August v. Wassermann

157. Carl Neuberg

tumors. To deal with the questions, which were more chemical than biological in nature, a chemical department was established along with the biological one. This department was headed by the Scientific Member Carl Neuberg (1877–1956). Neuberg, a student of Emil Fischer and one of the founders of biochemistry, supported Wassermann's chemotherapeutic work by identifying new arsenic, quinine and salicylic acid compounds, but also worked on his own research on the affects of enzymes, the fermentation process and the biological effects of light.

At the beginning of the First World War many of the staff volunteered for military service. The bacteriological department, which was placed under the direction of the army administration, developed vaccines against cholera and typhoid and worked on other epidemic controls (paratyphoid, louse-borne typhus, dysentery, equinia illness in horses) and wound infections (gas gangrene, tetanus). Wassermann himself was a consulting hygienist and Chairman of the Kaiser Wilhelm Academy for Military Training and member of the

Reich's Health Council. Bacteriologist Martin Ficker (1868–1950), who was also a Scientific Member in the institute, took over his department as of October 1917.
Along with his other projects, Carl Neuberg dealt with the production of glycerin during the war. He extracted this from the fermentation of sugar to alcohol in a process which he developed. This process, for which W. Connstein and K. Lüdecke performed the technical work, became important for the production of glycerin substitutes from alkaline salts in lactic acid for the manufacture of nitroglycerin for explosives and for the recoil brake fluid in artillery cannons.
Besides receiving a number of offers of professorships from universities, Neuberg's work was rewarded with his own "**Kaiser Wilhelm Institute for Biochemistry**". While the decision to establish the institute was made in October 1917 by the Senate of the Kaiser Wilhelm Society, the institute was initially appended to the Kaiser Wilhelm Institute for Experimental Therapy. Neuberg received ongoing aid from the endowment of 2 million Marks donated by industry for the building of his institute. He did not take advantage of the opportunity to relocate his institute in the Center for Scientific-Technical Investigations in Neubabelsberg due to the poor location. The planned construction in Dahlem was subsequently cancelled, as the endowment was radically devalued by hyperinflation. In order to retain Neuberg, the Senate of the Kaiser Wilhelm Society decided in December 1922 to merge the two institutes to form the "Kaiser Wilhelm Institute for Experimental Therapy and Biochemistry". Neuberg became the second director. Less than three years later, in March 1925, August von Wassermann died and the two institutes were again separated. Neuberg remained director of his institute and was appointed interim director of the Kaiser Wilhelm Institute for Experimental Therapy. The guest department of Albert Fischer from Copenhagen at the Kaiser Wilhelm Institute for Biology was financed by the Institute for Experimental Therapy from 1926 to 1932. The institute also attained Martin Ficker's laboratory in the years from 1926 to 1934 as the "Research Center for Microbiology" (Ficker had been on sabbatical in São Paulo, Brazil since 1923), where primarily leprosy and other infectious diseases were studied, but coffee and cacao fermentation as well. Due to the fact that the Kaiser Wilhelm Institute for Experimental Therapy had become nothing more than an "institute in theory," consisting merely of Felix Klopstock's department for immunology, the institute was taken over by the Kaiser Wilhelm Institute for Biochemistry in 1934 and the budgets combined.
Tobacco imports had become expensive and German tobacco was not particularly well-liked by smokers even back then. This led to a request by the Reich's Economic Ministry in the early 20s, for the purpose of improving the balance of trade, that Carl Neuberg, an expert in the field of fermentation, work to improve the taste of domestic tobacco. A sep-

Kaiser Wilhelm Institute for Experimental Therapy / for Biochemistry

158. South side with main entrance

159. North side

arate institute for tobacco research was never established, but a department was set up under Neuberg in 1926 with Maria Kobel (1897–1996) serving as vice director until it was closed in 1935. The varieties of tobacco needed for the studies were grown in the institute's garden.

When, in July 1925, the Kaiser Wilhelm Society Senate decided to appoint researchers who had made exceptional scientific contributions to research to become "External Scientific Members of the Kaiser Wilhelm Institutes," Hans von Euler-Chelpin in Stockholm (1873–1964, Nobel Prize 1929) and Paul Mayer in Karlsbad (1872–1946) were the first appointed as External Scientific Members of the Kaiser Wilhelm Institute for Biochemistry.

Neuberg was able to continue his research without disruptions until 1933. He conducted investigations on fermentation, for the most part on yeast, enzymes (carboxylase, zymase, phosphatase), some of which he had discovered – and their functionality, on the process of phosphorylation (esterification of carbohydrates with phosphoric acid), which he had given its name. The almost 700 publications from his institute also offer insights into the many methods he developed. Most of these publications appeared in the 279 volumes of the "Biochemische Zeitschrift," which he founded in 1906 and edited until 1935. While anti-Semitic clauses of the Nazi "Law for the Reinstitution of the Career Civil Service" did not apply to Neuberg, because he had served in World War I, he was politically denounced by a staff member and, as a result, forced into retirement in September of 1934. The President of the Reich's Health Office, Hans Reiter (1861–1969), one of Wassermann's staff members in the twenties, attempted during this period to force the incorporation of the Kaiser Wilhelm Institute for Biochemistry into the Health Office. The Kaiser Wilhelm Society was able to hinder this plan. Neuberg continued to serve as temporary director of his institute until all of the existing departments were closed in October 1936. Until his emigration in 1938 he ran a private laboratory supported by Butenandt's institute. It was located in Theodor Sabalitschka's Biological-chemical Research Institute at Berlin-Schöneberg. He left Germany "at the last minute," arriving in the USA in January 1941, after an odyssey leading him halfway around the world. In the US he was appointed an honorary professor at the University of New York. In 1948 he accepted a call to become a Scientific Member of the Max Planck Society as a form of indemnification.

With the appointment – following a number of differences with the Ministry of Culture – of the "politically unreliable" Adolf Butenandt (1903–1995) from the Technical College of Danzig on November 1, 1936, the Kaiser Wilhelm Institute for Biochemistry underwent a complete restructuring. Butenandt had already made a name for himself at an early age with his habilitation thesis "On the female sexual hormone" (later named "estrogen").

160. Adolf Butenandt

Following a 10-month remodeling of the institute, he and his staff, Gerhard Schramm, Josef Schmidt-Thomé, Kurt Tscherning and Ulrich Westphal, all of whom he had brought with him from Danzig, continued the investigations on the "Chemical constitution and synthesis, the physiology and pathology of the sex hormones and their related steroids" (report from 1935/37) which they had begun in Danzig. Due to the impossibility of conducting research during the remodeling period, he planned virology studies, which he then began performing in 1937 in cooperation with Alfred Kühn and Fritz von Wettstein of the

Kaiser Wilhelm Institute for Biology (pg. 42). Schramm investigated the proteins of the tobacco mosaic virus, developing a powerful ultracentrifuge for their separation in the process. In 1939, Butenandt was awarded the Nobel Prize (together with Leopold Ružička) for his work on sexual hormones, but because of Hitler's ban he had to refuse and was only able to accept it after the war. The prize money was no longer available.
In the spring of 1943 Butenandt established a department for tissue breeding at his institute under the direction of Else Knake (1901–1973) – see chapter 15. Because it was not possible to transport these sensitive cultures, the department had to remain in Dahlem when the Kaiser Wilhelm Institute for Biochemistry and the Center for Virology were evacuated to Tübingen for war-related reasons (pg. 154). There, the institute, temporarily located at eight different sites, was affiliated with the university and Butenandt took a professorship for physiological chemistry in December 1945, while at the same time heading the Institute for Physiological Chemistry. The Center for Virology was discontinued in the fall of 1945, its botanical department (Georg Melchers) assimilated into the Kaiser Wilhelm Institute for Biology and the remaining departments into the Kaiser Wilhelm Institute for Biochemistry.
When the Free University of Berlin was founded, the Department of Pharmacology was established in the institute's empty building. Currently this houses the Institutes for Immunogenetics, for Occupational Medicine and for Bio-fine Mechanics of the Charité Universitätsmedizin Berlin – Campus Benjamin Franklin.

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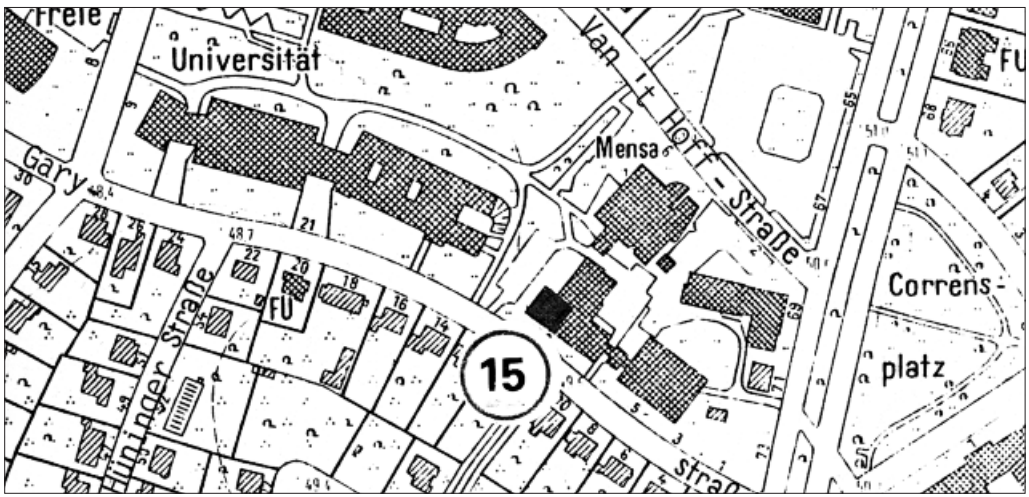
Robert Havemann (pg. 107), appointed by the Berlin Magistrate in 1945, led the Berlin Kaiser Wilhelm Institutes from the former gatehouse of the Kaiser Wilhelm Institute for Biochemistry until he was replaced in July 1949 by Franz Arndt, Office Director of the Kaiser Wilhelm Society. In October 1950, the general administration established their own office here, headed by Walther Forstmann. After the transformation of the former Kaiser Wilhelm Institutes from the German Research Academy to the Max Planck Society in July 1953, it became the **Berlin Administrative Office of the Max Planck Society.** Following Forstmann's death (1956), the office was headed by Marianne Reinold until it was closed in 1970. Today it also belongs to the Free University of Berlin and is also used by the Institut für Arbeitsmedizin der Charité Universitätsmedizin Berlin – Campus Benjamin Franklin and its director Prof. David Groneberg (policlinic) and by the Europäische Forschungsvereinigung für Umwelt und Gesundheit im Transportsektor e.V. (EUGT) as a branch office.

15. Research Unit for Tissue Breeding at the Max Planck Society / Institute for Human Development and Education at the Max Planck Society

From the former gatehouse at Thielallee 71, the path leads a couple of steps to the right to the traffic light where you take a right into Garystraße. At Garystraße 5–7 (formerly no. 9) there used to be a small building, the so-called yellow house, which was torn down to make room for the multi-story laboratory for the Department of Embryonic Pharmacology at the Free University, meanwhile Department Toxicology of the Institute for Clinical Pharmakology und Toxicology of the Charité Universitätsmedizin Berlin – Campus Benjamin Franklin. This also houses the WHO Reproduction Toxicology Cooperation Center and the National Cardiovascular Genome Research Network.



The former building had been constructed in 1926/27, on the property of the Kaiser Wilhelm Institute for Experimental Therapy, as a research institute for hygiene and immunology for Ernst Friedberger (187–1932) and, following his death, used by the physiological department of the Kaiser Wilhelm Institute for Brain Research (Max Heinrich Fischer) from 1933 to 1936. Else Knake (1901–1973) worked here from 1948 to 1963.

Adolf Butenandt had hired the pathologist and former assistant to Ferdinand Sauerbruch from the Berlin University to head the department for tissue breeding at the Kaiser Wilhelm Institute for Biochemistry in 1943. Because the cultures were too sensitive to be transported, her department remained in Berlin when the institute was evacuated and dismantled in 1945. Due to the fact that the institute remained in Tübingen for some time after the war, Knake's department was first given the status of a guest department for tissue research (later: tissue breeding) at the Kaiser Wilhelm Institute for Physical Chemistry and Electrochemistry. Since that time her department has been administratively affiliated with a number of the Society's institutes, from 1948 to 1950 with the Kaiser Wilhelm Institute for Cell

163. Else Knake

164. Research Unit for Tissue Breeding (torn down)

Physiology, which was also in the building at Garystraße 9, until its building at Garystraße 32 was returned. Then the department went to the German Research Academy and as of 1953 to the Max Planck Institute for Comparative Hereditary Biology and Hereditary Pathology. In January 1962, it became independent as the Research Unit for Tissue Breeding at the Max Planck Society, but was closed in March 1963 when Knake prematurely retired.
The difficult conditions during and after the war, which complicated the work with the tissue cultures, led Else Knake to deal with questions about transplants, a subject that she had previously been motivated to pursue by Moritz Katzenstein and Ferdinand Sauerbruch. This also remained her central area of research when she returned to tissue breeding in 1955, as of 1959 employing the isotope method. In her department, physicians and biochemists from various fields investigated growth and metabolic physiology, as well as the differentiation of malignant tumors on tissue in animal experiments, tissue cultures and in test tubes.

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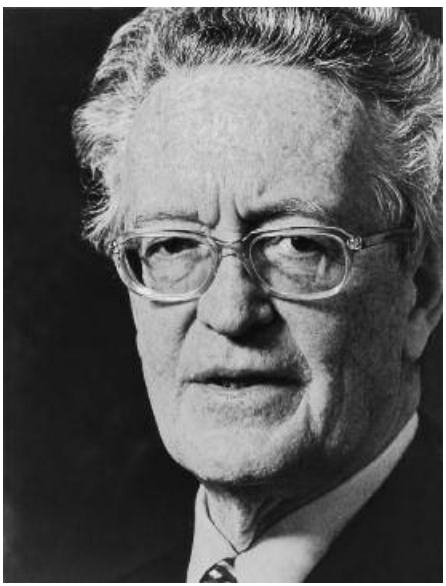
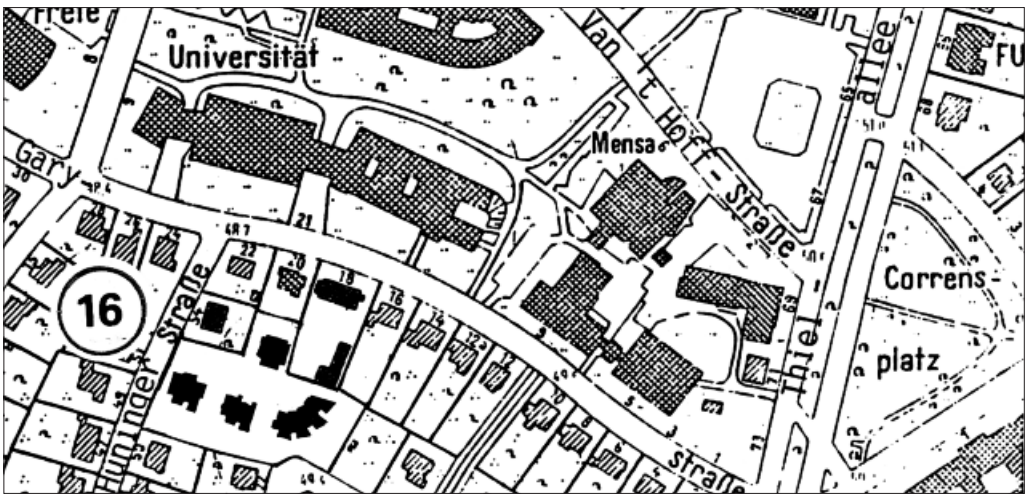
When the unit was closed, the building was used by the **Institute for Human Development and Education in the Max Planck Society** which was founded in the fall of 1963 with lawyer Hellmut Becker as director (1913–1993), son of Carl Heinrich Becker (1876–1933), Prussian minister of education and 3. vice-president of the Kaiser Wilhelm Society since 1930. However, the institute moved in the summer of 1964 to Blissestraße 2 in Berlin-Wilmersdorf, before finally taking up residence in 1974 in a new building in Lentzeallee 94 designed by Hermann Fehling and Daniel Gogel, now Max Planck Institute.



165. Hellmut Becker

16. Max Planck Society Residences in Hüninger Straße

Diagonally across the street at Garystraße 18 is a house with a brick foundation and green shutters. Behind the entrance to the garage a summer house, with a little tower and weather vane, is visible. You may recall the annex on the Archives' property which served as the starting point for our tour. In fact, the building is the director's residence, built for Otto Warburg with funds from the Gradenwitz Foundation. Today, it still serves as a residence for Max Planck Society institute directors. Two houses further down Garystraße, Hüninger Straße turns off to the left. At no. 54 was the residence of the former director of the Max Planck Institute for Comparative Hereditary Biology and Hereditary Pathology, Hans Nachtsheim. The next stop on the tour is the residences on the neighboring property (no. 52).



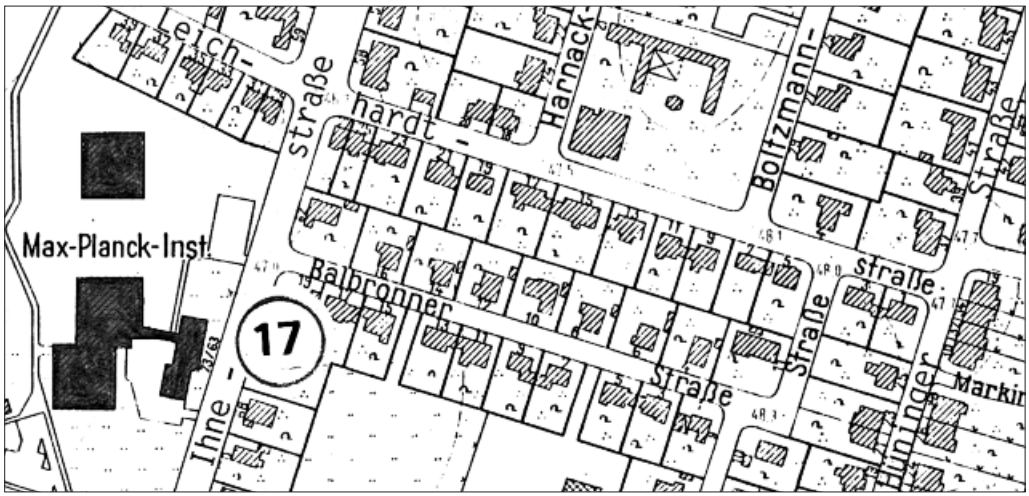
166. Director's residence of the Kaiser Wilhelm / Max Planck Institute for Cell Physiology, today belonging to the Fritz Haber Institute of the Max Planck Society

167. Hüninger Straße 52 residences

The group of houses known as “Max Planck Society village” by its residents was built in 1981/82 by the Berlin planning group B 12 (architects Friedrich Borck, Matthias Boye, D. Schaefer) for executives of the Berlin Max Planck Institutes. The back left piece of property borders on the yard of Otto Warburg’s residence, who used this area as a riding course (no. 52 D and E) and orchard. The Reich Film Archives, founded in 1935 in the Harnack House, temporarily stored a portion of its material in a former greenhouse in Hüninger Straße. The 10 units in three duplexes and a semicircle are red-tile structures of various size and accouterments in Dutch style and offer as contemporary an appearance as did the founding director’s home in his time.

17. Max Planck Institute for Molecular Genetics

From the residences on Hüninger Straße, our tour continues down the street and turns right into Leichhardtstraße for just a few short steps, before turning left into Nebinger Straße and then shortly thereafter right into Balbronner Straße. This street ends at Ihnestraße on the other side of which stand two large modern buildings – the Max Planck Institute for Molecular Genetics. Until 1996, the building on the right served as the Institute for Genetic Biology Research Berlin GmbH – financed by the State of Berlin and Schering AG. Under its director, Lothar Willmitzer, this institute developed into the Max Planck Institute for Molecular Plant Physiology (since 1994 in Golm near Potsdam).



The **Max Planck Institute for Molecular Genetics** has its origins in the department for experimental hereditary pathology of the Kaiser Wilhelm Institute for Anthropology, Human Genetics and Eugenics. After World War II only this department continued and was taken over by the Max Planck Society in 1953 as the Max Planck Institute for Comparative Hereditary Biology and Hereditary Pathology (pg. 138). The renaming and reorientation of the institute coincided with the departure of its Director Fritz Kaudewitz. It had been recommended by the Biological-Medical Section of the Scientific Council,

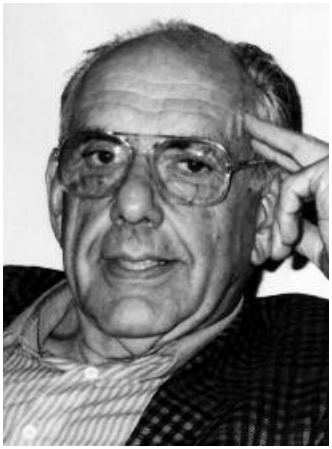
which also proposed the division into three departments and a visiting department. The Max Planck Society Senate voted to make these changes in December 1963, but they did not take effect until the new directors were appointed in 1964. This decision had been recommended by the Biological-Medical Section of the Scientific Council, which also proposed a division into three departments and a visiting department. According to the Section, the departments should be entrusted to "relatively young researchers capable of working together in close cooperation," because experience had shown "that especially with the conditions present in Berlin, a 'one-man institute' could easily become isolated. We feel that it is an important duty to set up an especially fruitful and dynamic research center be set up here at this place... Molecular Genetics... is a relatively new field of research... dealing with mechanisms central to all living creatures. These connect the reproduction of individual beings with preservation of their hereditary biochemical, morphological and physiological properties with the chemism of their genes, made of nucleic acids, and the synthesis of all proteins and ferments controlled thereby. The area has developed dramatically in the last few years. In Germany, the most important contributions to this field have been made by research groups from our institutes in Tübingen and Munich, which have succeeded in gaining on the considerable lead which foreign countries had enjoyed in this field." (Section).

While Heinz Schuster (1927–1997), formerly at the Max Planck Institute for Virology and at the time in the USA, and Heinz-Günter Wittmann (1927–1990) of the Max Planck Institute for Biology accepted appointments as department heads and directors, Gunter S. Stent (1924–2008) of Berkeley refused, but did offer his assistance in the reorganization. He was appointed as External Scientific Member of the institute in 1967. Thomas A. Trautner (born 1932), at that time in the USA, took on the position of the third department head. A new building was planned for the institute, located on the so-called "Dreipfuhl property" south of Leichhardtstraße. The Max Planck Society had obtained it in 1957 from Berlin by way of an exchange of properties. In 1965, an architecture competition was arranged. The 1st prize was awarded to the Stuttgart architect Rolf Gutbrod (who also later designed the neighboring Institute for Genetic Biological Research), but due to financial difficulties and objections from the neighbors, it was delayed and is built smaller than originally planned. Schuster and Trautner therefore had to take up quarters in the Max Planck Institute for Comparative Hereditary Biology and Hereditary Pathology on January 1, 1966. Wittmann's department moved into a temporary laboratory in Harnackstraße 23 in early 1967. This laboratory also served as both a model and test laboratory for the new building.

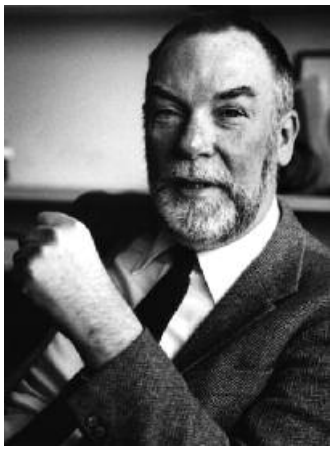
All three departments were able to move into the 80% completed building at Ihnestraße

168. Institute with workshops (foreground), administration (left, behind institute building) and the former Institut für genbiologische Forschung GmbH (Institute for Genetic Biological Research) (right, under construction)

169. The institute seen from Ihnestraße, first phase of construction 1968/70



170. Heinz Schuster



171. Thomas A. Trautner

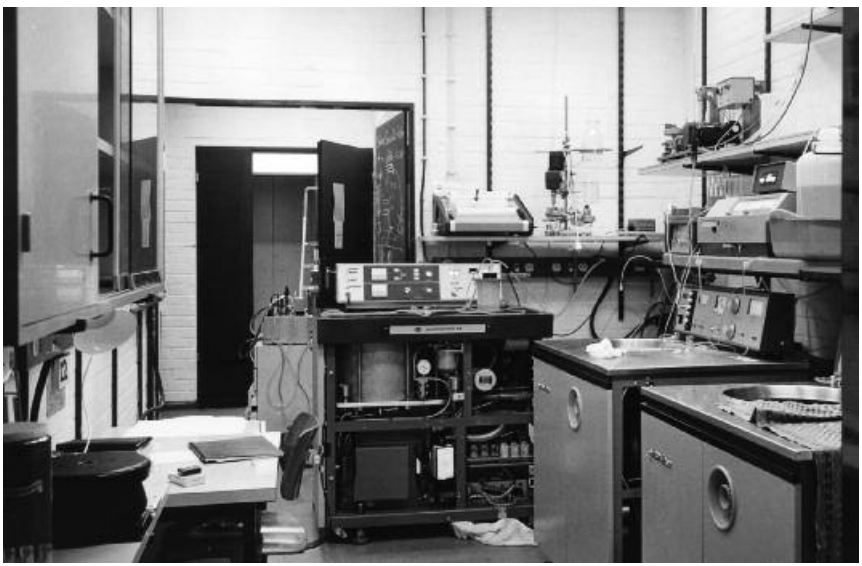
172. Heinz-Günter Wittmann

63–73 in 1969/1970, which was officially dedicated on October 21, 1971. The remaining laboratory space was completed in 1976/77. A lecture hall and administrative wing were added in 1985. In 1996 "Turm (tower) IV" was taken over from the Institut für Genbiologische Forschung Berlin GmbH (Institute for Gene Biological Research Berlin), which had been run by the State of Berlin and the Schering AG from 1986 to 1996. Finally, as well as a building for mice breeding was established, due to the fact that the previous animal facility at the corner of Leichhardtstraße and Harnackstraße and the temporary laboratory and animal husbandry building had to be demolished for a new building housing the Max Planck Institute for the History of Science.

The visiting department, which had originally been planned, was not completed. In its place four independent junior research groups were established in 1970. They were named "Otto Warburg Laboratory" in 1983 on the occasion of Warburg's 100th birthday (since 1981 some of these were in Harnackstraße 23). Today there are four junior research groups at the institute, headed by Sylvia Krobitsch (Neurodegenerative Disorders), Michael Lappe (Bioinformatics / Structural Proteomics), Ulrich Stelzl (Molecular Interaction Networks) and Sascha Sauer (Nutrigenomics and Gene Regulation).

Heinz Schuster's department (until 1995) dealt with questions of the molecular mechanisms of DNA replication and gene regulation in plasmides, bacteria and bacteriophages, as well as special aspects of retrovirological research. Karin Mölling's group (until 1993) worked on retroviruses responsible for malignant tumors and AIDS. Thomas A. Trautner's department (until 2000) dealt with questions of DNA replication, recombination and

173. Laboratory of the Wittmann department



174. Centrifuge room in second floor

function, using plasmides, bacteriophages, bacteria and minor fungi. Both departments primarily employ gene technological methods. Heinz-Günter Wittmann's department (died in 1990), of which the Research Group Ribosomes (Knud H. Nierhaus) still exists, studied the structure, function and evolution of ribosomes, those cell organelles in which protein biosynthesis occurs. The Bacterium Escherichia coli served as the primary object of the mostly biochemical, biophysical and genetic experiments.

In 1986, the Max Planck Society established research groups for structural molecular biology at the Deutsches Elektronen-Synchrotron in Hamburg. One of these groups, the Ribosomal Structure Group headed by Ada E. Yonath (Nobel Prize for Chemistry 2009), started as satellite station of the Institute. It became independent in 1991 and existed until 2004.

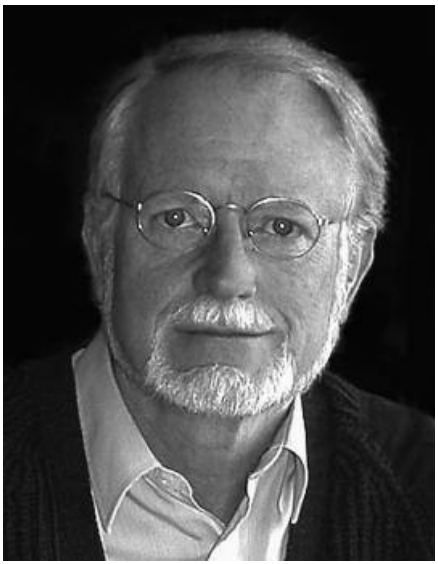
174a. Ada E. Yonath

In 1994 the institute changed its research profile towards genome analysis and human genetics by appointing Hans Lehrach (born 1946) and Hans-Hilger Ropers (born 1943) as directors of the institute and Scientific Members. Lehrach's Department Vertebrate Genomics is engaged in the molecular genetic analyses of the vertebrate genomes and the analysis of human hereditary diseases, concentrating on the analysis of human genes, their function and evolution as well as the development and application of new techniques for the functional analysis of the genome. Roper's Department Human Molecular Genetics also investigates the structure and function of the human genome, in particular the etiology and pathogenesis of monogenic and complex hereditary diseases. In addition, it works on the development of methods for the detection of subtle differences between related genomes. The Resource Center of the German Human Genome Project in Berlin-Charlottenburg (Heubnerweg 6) was conducted in association with the Max Planck Institute for Molecular Genetics before it was spun off on July 1th, 2000 as the RZDP – Deutsches Ressourcenzentrum für Genomforschung GmbH. Today all the departments of the institute are involved in the German Nationales Genomforschungsnetz (National Genome Research Network, NGFN).

Martin Vingron (born 1961) succeeded Trautner in autumn 2000 as Director of a new

175. Bernhard G. Herrmann

176. Hans Lehrach



177. Hans-Hilger Ropers

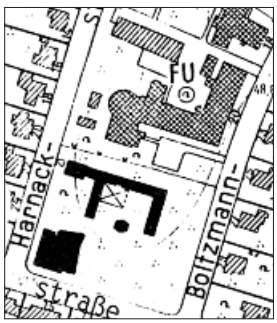
178. Martin Vingron

department of Computational Molecular Biology whose field of activity consists of the theoretical analysis of DNA and amino acid sequences of genes and genetic families, theoretical methods in molecular evolution as well as data analysis of the functional genomics, in particular of gene expression data and gene regulation. The Independent Research Group Development and Disease headed by Stefan Mundlos (born 1958) has also been at the Institute since 2000. In 2003 a fourth Department for Developmental Genetics was established under the direction of Bernhard G. Herrmann (born 1956), who is also a professor at the Charité – Universitätsmedizin Berlin. The Department deals with the molecular genetic analysis of morphogenesis and organogenesis in mammals as well as the investigation of transmission ratio distortion, a phenomenon resulting in the inheritance of traits at non-mendelian ratio by the t-complex in mice. In 2004 the institute established an International Max Planck Research School for Computational Biology and Scientific Computing in cooperation with the Free University of Berlin with Martin Vingron serving as the chairperson.
The Max Planck Institute for Molecular Genetics has just under 500 employees, including 116 scientists and 104 junior and 26 guest scientists as well as 170 employees paid by third-party funds and 26 guest researchers (End of 2008). The Board of Directors consists of the Scientific Members mentioned above Bernhard G. Herrmann, Hans Lehrach, Hans-Hilger Ropers and Martin Vingron.

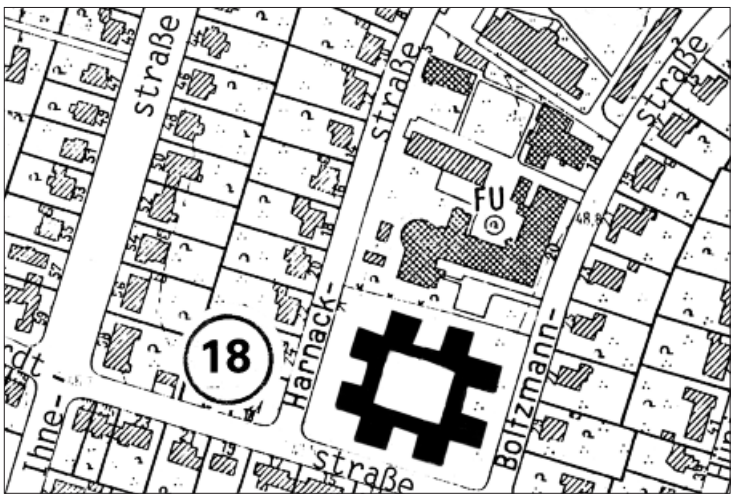
179. Administration building

18. Vennesland Research Unit of the Max Planck Society / Otto Warburg Laboratory of the Max Planck Institute for Molecular Genetics / Max Planck Institute for the History of Science

From the Max Planck Institute for Molecular Genetics the tour leads down Ihnestraße toward the subway station Thielplatz, but only to the next intersection, with Leichhardtstraße. Here it is possible to make a small detour to the left to the Dreipfuhl Park, the residential area for Max Planck Society dependents in Lützelsteiner Weg and the day care center established by the Max Planck Institute for Human Development and Education, or to follow the suggested route along Leichhardtstraße. At the corner where today the large new building of the Max Planck Institute for the History of Science stretches up to Boltzmannstraße, there was a small laboratory building from 1967 until it was torn down in 2004.



Until 2004



Today

The flat building was built in 1966 as the temporary quarters for Wittmann's department of the Max Planck Institute for Molecular Genetics, because there was not enough room for his department in the building of the Max Planck Institute for Comparative Hereditary Biology and Hereditary Pathology in Ehrenbergstraße, and the new building in Ihnestraße was suffering delays. Originally it had been planned to rebuild the stables of the Max

180. Otto Warburg Laboratory of the Max Planck Institute for Molecular Genetics, east side

Planck Institute Comparative Hereditary Biology and Hereditary Pathology at Harnackstraße 21–23, but these proved to be unsuited. Therefore, the architect of the new building, Rolf Gutbrod (Stuttgart) was charged with building a small laboratory on the property that should also serve as a model and test laboratory for the larger building.

When Otto Warburg died in 1970 and before the decision to close the Max Planck Institute for Cell Physiology became final, the Research Group Vennesland was established here for his colleague, a Norwegian, where she could continue her work on the oxygen production in photosynthesis and nitrogen metabolism in plants. As the new building for the Max Planck Institute for Molecular Genetics was completed, the laboratory in Harnackstraße 23 became available. Birgit Vennesland (1913–2001, Scientific Member since 1967) worked here until her retirement in 1981.

Since then some of the Junior Research Groups of the Max Planck Institute for Molecular Genetics had been located here. They were named Otto Warburg Laboratory on the occasion of his 100th birthday. These groups are headed by young scientists who, within the framework of their projects are also given financial and personnel responsibilities.

181. Birgit Vennesland

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Max Planck Institute for the History of Science

182. Entrance

183. Chestnut courtyard

184. Lorraine Daston

185. Jürgen Renn

186. Hans-Jörg Rheinberger

On one part of the property known as the Rockefeller Lot at Harnack, Leichhardt and Boltzmannstraße (entrance at no. 22), where the Otto Warburg Laboratory as well as the animal stalls of the Max Planck Institutes for Hereditary Biology and Pathology and Molecular Genetics stood until 2004, there is the new building of the Max Planck Institute for the History of Science, designed by the office of Dietrich + Dietrich in Stuttgart and erected around a Chestnut courtyard. The new institute, with a semi-submerged library and two additional storeys, moved into the building in February 2006 and held the dedication ceremony on July 28.

The institute, founded in 1993, began its work in 1994 in the top floor of the Otto Warburg building in Berlin-Dahlem (as of March, Boltzmannstraße 14) and as a guest of the Max Planck Institute for Human Development in Berlin-Wilmersdorf (Lentzeallee 94), then as a tenant in the embassy of the Czech Republic in Berlin-Mitte (as of summer 1994, opening on March 31, 1995 Wilhelmstraße 44 at the corner of Mohrenstraße). The Max Planck Institute for the History of Science investigates how centuries of interaction between sciences and the surrounding cultures have established new categories of thought, proofs and experiences. The research projects cover a wide range of varying disciplines and epochs, from Babylonian mathematics to modern genetics, from natural history of the Renaissance to the early days of quantum mechanics.

187. View of the Archives "Tower of Lightning"

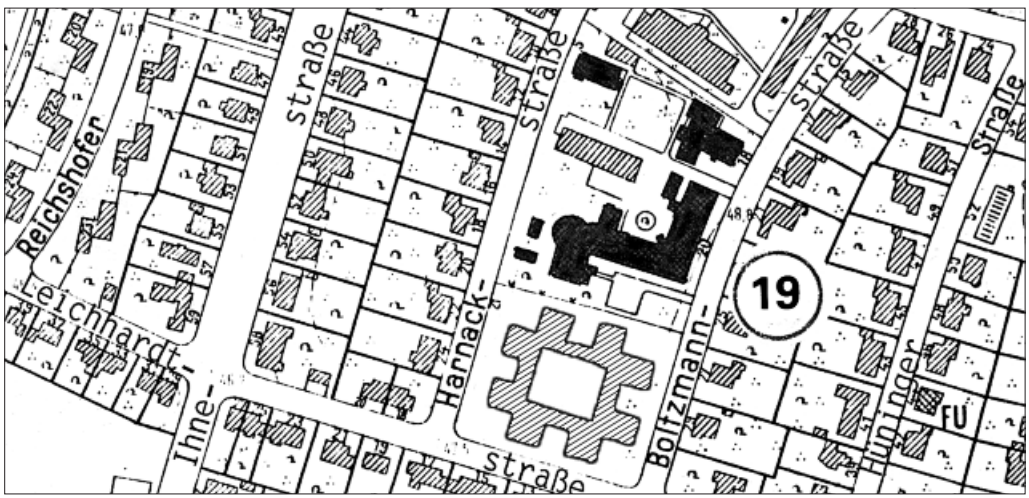
188. Library

There are also a number of former scientists from the Institute for the Theory, History and Organization of Science at the GDR Academy of Sciences who have been working at the institute since 1994/1995. These researchers temporarily worked on the "History of Science and Theory of Science" project that was managed by the Max Planck Society.
The institute consists of three permanent departments headed by directors which deal with the "Structural Change in Knowledge Systems" (Department I: Jürgen Renn / Boston, since March 1, 1994), the "Ideals and Practices of Rationality" (Department II: Lorraine Daston / Chicago, as of July 1, 1995) and "Experimental Systems and Knowledge Spaces" (Department III: Hans-Jörg Rheinberger / Salzburg, as of January 1, 1997). In addition to these three departments which are headed by historians for physics, mathematics and biology, there are two independent research groups, each directed by junior researchers for a term of five years. At the time when the institute moved into its offices in Dahlem, there were 36 researchers. In addition, there are 120 guest scientists each year whose work is supported by a research coordinator, the library (for 100,000 pieces of media) and a media

department. This group is investigating the potential of new media for the history of science and further developing this with the institute's library as a pilot project for other areas of cultural sciences. The computer-aided collection of source material for the history of science is also available in the internet (www.mpiwg-berlin.mpg.de/en/resources/).
The institute is part of an international network consisting of research institutions and individual researchers. The international cooperation is made possible by a large number of scientific guests and research grants around the world. The joint projects range from cooperations on book projects for the digitalization of historical sources to the development of computer-aided research instruments for the humanities. Central funds from the Max Planck Society have also promoted the "History of Scientific Objects" (2005) project as well as a tandem project with the Fritz Haber Institute "History of Quantum Mechanics" (2007). The institute also supports major exhibitions on the history of science such as those in Berlin about Albert Einstein (2005) and Max Planck (2008). In memory of the its designated director, the Göttingen historian and philosopher Lorenz Krüger, the spiritual pioneer and tireless promoter of the new institute who died in September of 1994, the Max Planck Institute for the History of Science regularly grants the Lorenz Krüger Scholarship.
At the end of 2008 there were a total of 121 persons working at the institute including 42 scientists and 34 junior researchers; plus five funded researchers and 53 guest scientists in the reporting year.

19. Kaiser Wilhelm Institute for Physics

Continuing down Leichhardtstraße, turn left into Boltzmannstraße at the first intersection and head towards the former Physics Institute (Boltzmannstraße 18–20). The building is plainly visible with its red-brick tower and the main entrance topped with an imperial roof. Upon closer observation one will find the head of Minerva – the sign of many of the former institutes of the Society – chiseled in the stone above the door. On the right, engraved in the stone door frame you can still read "Kaiser-Wilhelm-Institut für Physik", while above the door, above the Minerva is in blue ceramic letters stands "Max-Planck-Institut". To understand the dual identification, requires some knowledge of the institute's history.



In Harnack's famous 1909 paper for Kaiser Wilhelm II, he requested that basic scientific research be given greater support, and he asked that a research institute for physics be established, in accordance with Philipp Lenard's proposal. However, when the Kaiser Wilhelm Society was founded there was no immediate move set up a physics institute, particularly considering that there was already the Reich's Physics-Technical Institute. But when the Berlin businessman Leopold Koppel agreed to finance a physics institute along with the Kaiser Wilhelm Institute for Physical Chemistry and Electrochemistry that he

189. Albert Einstein

already supported financially, Fritz Haber, Walther Nernst, Max Planck, Heinrich Rubens and Emil Warburg applied to the Ministry of Culture and Education to "establish a Kaiser Wilhelm Institute for Physical Research," the head of which should be Albert Einstein (1879–1955), who had just become a professor in Berlin. "The purpose of this institute is to form collegial groups of talented physicists to solve important and urgent physical problems, so as to provide comprehensive solutions to the questions through mathematical-physical observations and laboratory experiments in an organized manner" (KWG-Handbuch, 1936). On the basis of this modern petition, which would allow scientists from various fields to work together on a single project for a period of time, the Senate of the Kaiser Wilhelm Society decided on March 21,1914 to found the institute together with the Koppel Foundation. However, due to the fact that the Ministry of Finance, shortly before the outbreak of the First World War, was unable to supply the intended 1/3 of the capital, the plan had to be delayed until 1917. The Berlin industrialist Franz Stock supplied the missing third of the capital, a sum of half a million marks. The Board of Directors, with Albert Einstein as chair, also had Fritz Haber, Max von Laue, Friedrich Paschen, Max Planck and Emil Warburg as its members. It was charged with the task of administering the available funds (an initial budget of 75,000 marks in the first year). Because Einstein had to temporarily leave the country due to threats upon his life, he asked Nobel Prize winner Max von Laue (1879–1960) to become Vice director in October 1922. This transpired shortly before he was awarded the Nobel Prize (November 9, 1922) for the year 1921.

The "**Kaiser Wilhelm Institute for Physics,**" which was less an institute than a "fund" for the aid of physics (in the fields of atomic physics, X-ray physics, astrophysics, etc.), did not at first have its own building, but was located in the director's apartment in Berlin-Schöneberg (Haberlandstraße 5). To prove Einstein's Special Theory of Relativity, the institute financed Erwin Finley Freundlich's research work on Potsdam's Telegraphenberg in the

190. Erwin Finlay Freundlich

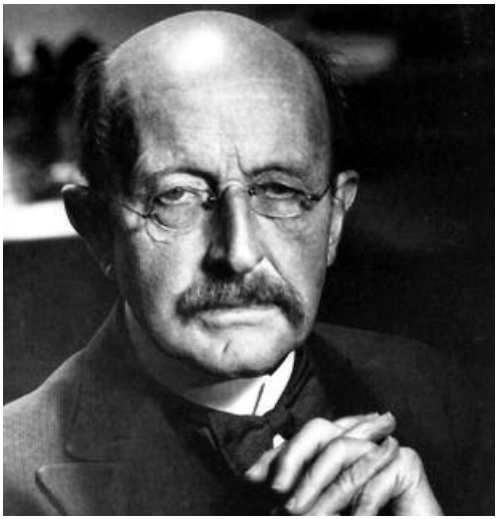
191. Karl Weißenberg

192. Max v. Laue

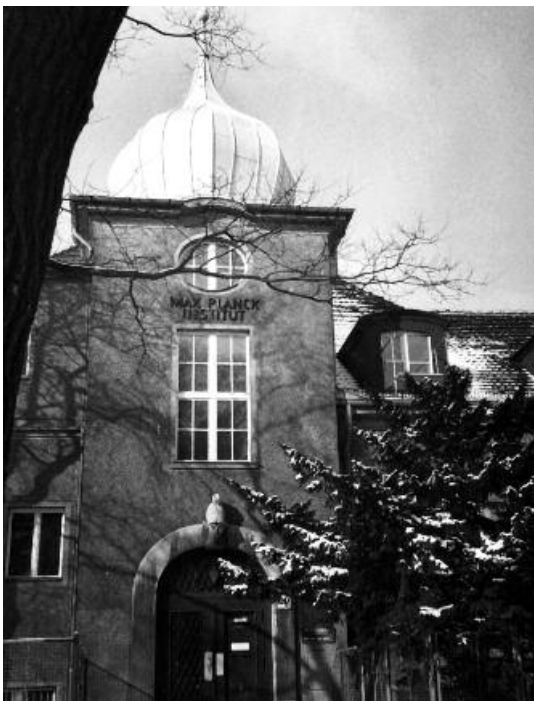
Solar Observatory (Einstein Tower) designed by Erich Mendelssohn in 1920/21 and funded by the Einstein Foundation. Otherwise, the work of the institute can be summarized as follows, "The institute limited itself for a time to purchasing equipment for physicists at the various colleges and supplying young physicists with scholarships. When these tasks were assumed by the Notgemeinschaft der Deutschen Wissenschaft, the institute concentrated its resources on its own projects and supported at that time [Karl] Weißenberg [1873–1978, appointed Scientific Member in May 1929] in his mathematics-physics work, which is important for a number of Kaiser Wilhelm Institutes. It is intended to expand the insti-

193. Inscription next to entrance

194. Kaiser Wilhelm Institute for Physics from the south



195. Max Planck, President of the Kaiser Wilhelm Society at the founding of the institute

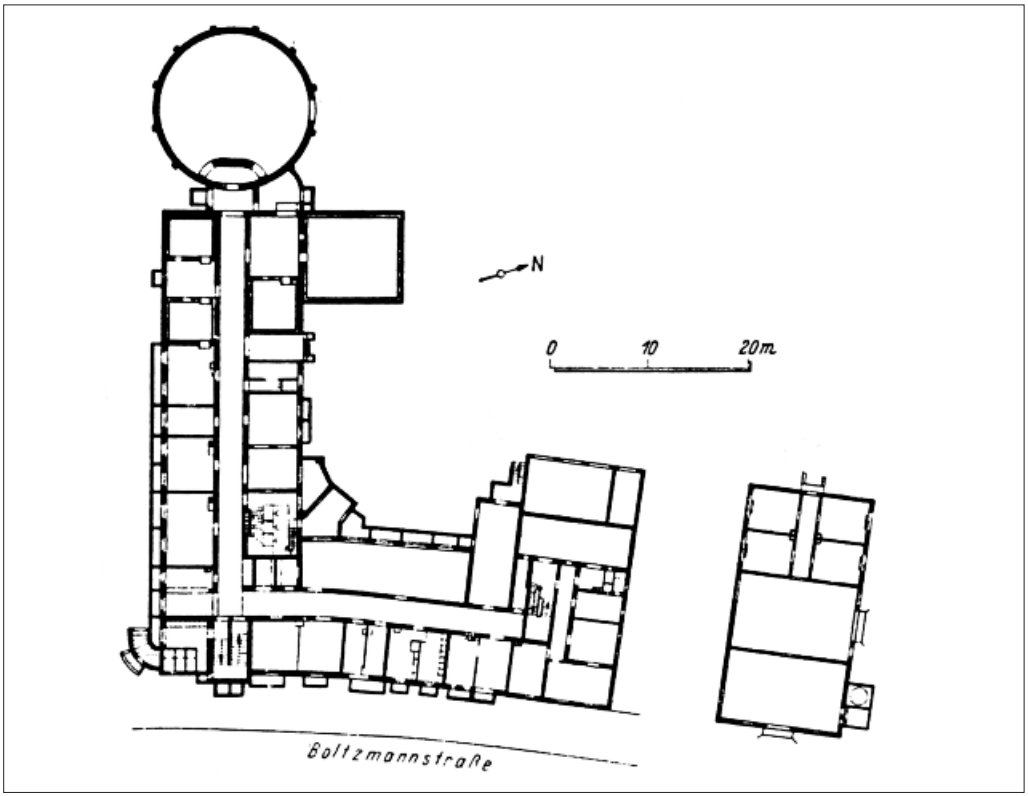


196. Entrance to the "Max Planck Institute"

tute in such a way that it will be able to support the other institutes as a sort of general staff of physicists" (KWG-Handbuch, 1929). This intention was also the base for von Laue's petition in 1929 to "establish an institute for theoretical physics as an expansion of the Kaiser Wilhelm Institute for Physics". This petition represented the fact that even theoretic research could not function without experimental control or the equipment necessary to conduct such. As a result of the economic crisis in Germany, it was not possible for the Kaiser Wilhelm Society to provide the necessary funds, but at the behest of Otto Warburg, the Rockefeller Foundation did provide a portion of the funding in 1930. The Rockefeller Foundation was willing to provide the Kaiser Wilhelm Society not only the funding for "his" Kaiser Wilhelm Institute for Cell Physiology (see that section), but for a building for the Kaiser Wilhelm Institute for Physics as well – again along the lines of von Laue's plans. Warburg hoped to cooperate with the institute in the field of methods and equipment development. Whether Albert Einstein would have continued to be director or Max von Laue (as proposed by Warburg) or James Franck (favored by Planck), can no longer be said, due to the fact that Einstein and Franck, as well as Karl Weißenberg, were forced to emigrate on account of the Nazi's racial legislation. Max Planck, President of the Kaiser Wilhelm Society as of July 1930, turned, in 1933, to the Dutchman Peter Debye (1884–1966), both a theoretical and experimental physicist in Leipzig, who had received grants for the Kaiser Wilhelm Institute for Physics on a number of occasions. Despite his acceptance of the position, the negotiations took until 1935, due to the fact that Debye was unwilling to take on the position at the Friedrich Wilhelm's University vacated by the retiring Walther Nernst as well. Planck eventually succeeded – as President and persona grata of the Rockefeller Foundation – in guaranteeing that the funds would be properly used in the Nazi state and the building, designed by Carl Sattler, was built in 1935–37 in Berlin-Dahlem.

The building was designed in the shape of an "L," with the west end connected to the white-brick tower with its ultra high-current plant for nuclear experiments (a +/– 1.4 million volt particle accelerator, two "cascades"). Besides the Colloquium Room (with two paintings, see fig. 198–199) with its own staircase on the south side, the longer wing contained the laboratories, the wing facing Boltzmannstraße contained chemical laboratories, an equipment room and workshops. The cold laboratory, due to its dangerous hydrogen experiments, was housed in its own low building (Boltzmannstraße 16), next to the main building.

The research tract, which was originally to be called the "Albert Einstein Institute" and now "Max Planck Institute" (this too met with resistance as a result of Planck's disagreements with Hitler), was officially handed over to Peter Debye (director since October 10,

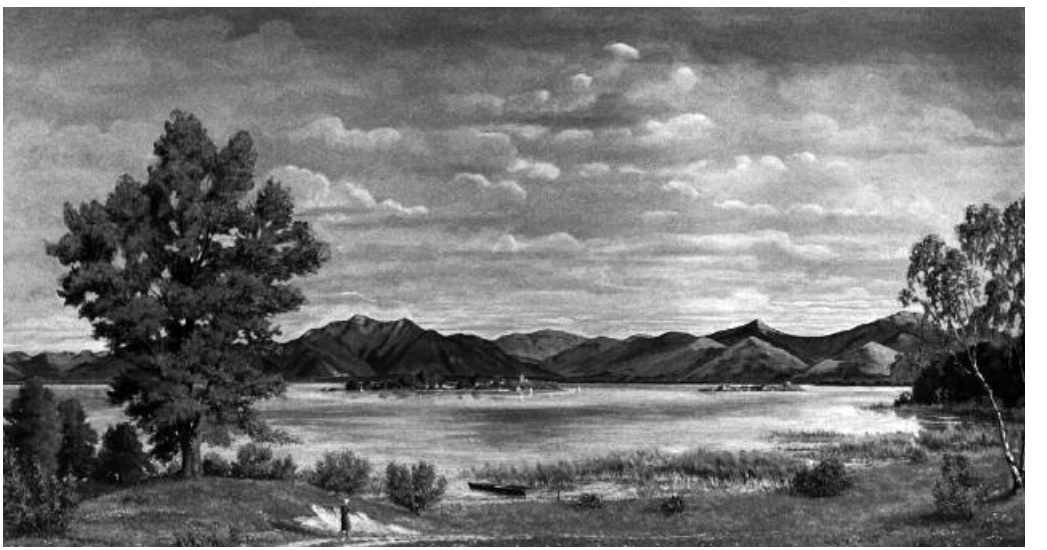


197. Floor plan - ground floor

1935, Nobel Prize in Chemistry 1936) and vice director Max von Laue on May 30, 1938. In the meantime the "very universally" equipped institute, combining theoretic and experimental physics, had already commenced its work in the spring of 1937. Under Debye's direction, until 1940, short though it was, the institute produced an impressive amount of work.

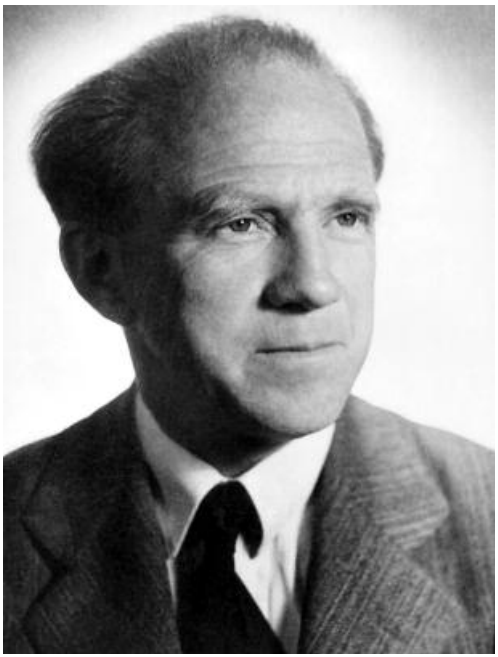
There were essentially three working groups at the institute, whereby Debye's consisted not only of the ultra high-current plant (Willem van der Grinten, Wolfgang Ramm) and the cold laboratory (Ludwig Bewilogua), but a group for dipolar measurements and one for electron diffraction in gases (Fritz Rogowski). Later, a group for thermodiffusion in fluids (Horst Korsching, Karl Wirtz) was added. The second group under the direction of Max von Laue investigated the diffraction of X-rays (Jürgen Beck, Gerhard Borrmann, Georg

198. Dutch coastal landscape



199. Chiemsee

200. Peter Debye

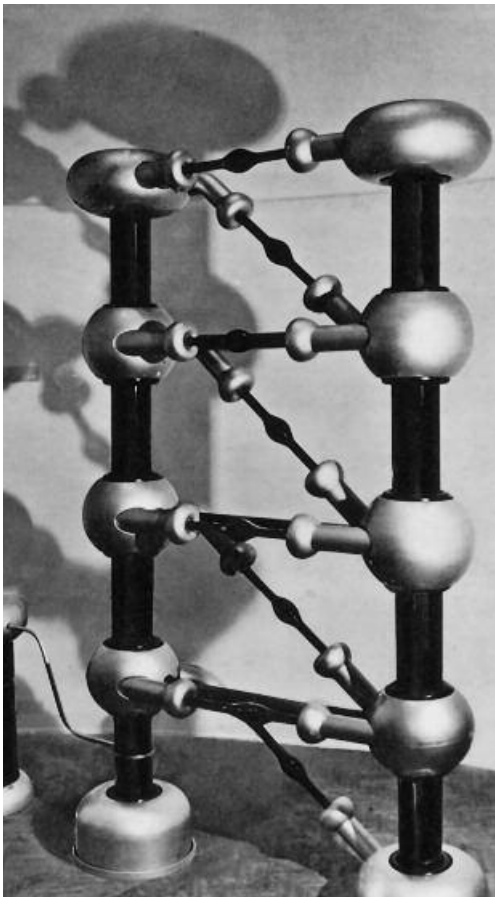


201. Werner Heisenberg

Menzer), while the third, the spectroscopic group, under Hermann Schüler, worked on magnetic and quadrupole moments of atomic nuclei (Heinz Gollnow, Heinz Haber, Horst Korsching, Theodor Schmidt, Adalbert Woeldike). In addition, there were very soon a number of guests from both Germany and abroad, as well as graduate students, so that the number of articles published by the institute increased rapidly. Debye was able to continue his various studies on the molecular nature of gases, liquids and solids in Dahlem. New studies, for example of the magnetocaloric effect, led to approaching absolute zero (–273.15°C) to within a couple of thousandths of a degree.

With the outbreak of World War II, the Army Office of Weaponry conducted studies starting in October 1939 to determine to what extent nuclear fission, as discovered by Otto Hahn (1879–1968) and Fritz Straßmann (1902–1980) in the Kaiser Wilhelm Institute for Chemistry the previous year, could be applied militarily. Because the Kaiser Wilhelm Institute for Physics was chosen to conduct these studies, Debye, who refused to become a German citizen, could no longer remain director. He took a six-month sabbatical and accepted a guest professorship at Cornell University (Ithaca, New York, USA), starting in

202. St. Florian with 'Tower of Lightning', lost wooden figure from the Colloquium Room



203. Cascade generator in the 'Tower of Lightning'

January 1940. When he extended the professorship for another 6 years his salary was cut, but his sabbatical extended until the end of the war.
The majority of the Kaiser Wilhelm Institute for Physics – with the exception of von Laue's and Schüler's departments – were placed under the immediate authority of the Army Office of Weaponry in 1940. The overall leadership was in the hands of Kurt Diebner and Heinz Pose, while Otto Hahn and Werner Heisenberg (1901–1976, Nobel Prize 1932, previously of the University of Leipzig) were charged with the scientific directorship. The institute's research funds had to be used "for the problem of attaining energy from uranium fission" (Heisenberg), in other words for the construction of an "Uranbrenner" (uranium burner) as a reactor was then called, while the Army Office of Weaponry attempted to coordinate the work on military problems with scientific groups in other cities. The uranium research was canceled because the chances of success were slender. It was then taken out of the field of responsibility of Army Office and transferred, at Speer's request, in a reduced form to the Reich's Research Office (Abraham Esau) and other institutions. The Kaiser Wilhelm Society then took over control of its institute again, and in October 1942 appointed Heisenberg as Director "at" the Kaiser Wilhelm Institute; Max von Laue remained vice director. Heisenberg continued to work on the construction of the uranium burner, for which large-scale experiments were conducted in Dahlem, accompanied by theoretic calculations about production, distribution and absorption of neutrons in the reactor. The most important material for the construction of a reactor, pure uranium, and heavy water and pure carbon as moderators, had, due to the war, become ever more difficult to obtain. Nevertheless, in the winter of 1943/44 Heisenberg and his assistants, along with the Heidelberg physicists from the Kaiser Wilhelm Institute for Medical Research, succeeded in constructing a "model reactor" with 1.5 tons of heavy water and about the same amount of uranium in the newly constructed bunker laboratory at the foot of the "Turm der Blitze" (Lightning Tower; since 1998/99 stockroom of the Archives of the Max Planck Society; the bunker laboratory now belongs to the adjacent Free University Archives). The model reactor produced "three times the number of neutrons shot at it" (Heisenberg, 1961). Due to the increasing danger of being bombed, the institute was moved out of Berlin to Württemberg. The experiments were continued in a former textile factory in Hechingen and in the granite basement of Haigerloch, where a final attempt resulted in 7 times the number of neutrons being released, but "the amount of material available was insufficient for the reactor to go 'critical'" (Heisenberg). Further experiments were brought to a stop by American troops in April/May 1945, who dismantled parts of the institute. The directors and some of the members of the institute were interred in Farmhall (England) till the end of the year.

204. Director's residence

205. Cold laboratory

The Dahlem buildings of the institute, which were for the most part empty, accommodated some of the Society's General Administration after the heavy bombing raids on the Berlin Castle in February 1945. The equipment remaining in Dahlem and the cold laboratory, along with its head, Ludwig Bewilogua, were taken to the Soviet Union in May 1945 for ten years. Today the Institute's property, with the exception of the Tower and the director's villa which will in the future be used by the neighboring Max Planck Institute for the History of Science, is leased by the Max Planck Society to the Free University Berlin and is used by the Department of Economics, its University Archives and the dem German Committee of AIESEC (International Association of Students in Economics and Management).

Other Max Planck Institutes located in Berlin and Brandenburg (table)

Max Planck Institute for Human Development
Lentzeallee 94, 14195 Berlin
under the International Max Planck Research School for the Life Course: Evolutionary and Ontogenetic Dynamics of the institute in cooperation with the Humboldt-Universität and the Freie Universität Berlin.

Max Planck Institute for Gravitational Physics (Albert Einstein Institute)
Am Mühlenberg 1, 14476 Golm bei Potsdam
under the International Max Planck Research School for Geometric Analysis and String Theory of the institute in cooperation with the Humboldt-Universität and Freie Universität Berlin and with the Universität Potsdam.

Max Planck Institute for Infection Biology
Schumannstraße 21/22, 10117 Berlin
under the International Max Planck Research School for Infectious Diseases and Immunology in cooperation with the Humboldt-Universität zu Berlin.

Max Planck Institute for Colloid and Interface Research
Am Mühlenberg 1, 14476 Golm bei Potsdam
under the International Max Planck Research School for Biomimetic Systems of the institute in cooperation with the Universität Potsdam.

Max Planck Institute for Molecular Plant Physiology
Am Mühlenberg 1, 14476 Golm bei Potsdam
under the International Max Planck Research School of Primary Metabolism and Plant Growth in cooperation with the Universität Potsdam.

Bibliography

This consists only of the literature which was quoted or used repeatedly, but does not represent a complete Dahlem bibliography. For further reading please use the references mentioned in the preface as well as the Archives homepage www.archiv-berlin.mpg.de with link to the library catalogue. Besides we recommend the following bibliographies and series:

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Hauke, Petra: Bibliographie zur Geschichte der Kaiser-Wilhelm- / Max-Planck-Gesellschaft und ihrer Institute. T. I-III. Berlin 1994 (Veröffentlichungen aus dem Archiv zur Geschichte der Max-Planck-Gesellschaft. 6).

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*

Adolf Butenandt und die Kaiser-Wilhelm-Gesellschaft. Wissenschaft, Industrie und Politik im „Dritten Reich". Hrsg. von Wolfgang Schieder und Achim Trunk. Göttingen 2004 (Geschichte der Kaiser-Wilhelm-Gesellschaft im Nationalsozialismus. 7).

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