

Paul Pulewka Founder of Turkey's Pharmacology While in Exile from the Nazis: 1935-1955

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Summary

Refugees from Germany transformed and modernized the teaching and the practice of pharmacology in Turkey. One of these was Paul Pulewka. For him and his colleagues at those times America was out of reach because of restrictive immigration laws and wide spread anti-Semitic hiring bias at its universities. Turkey saved a large percentage of those fired from their academic posts by the Nazis in Germany and later in Austria. Yet this significant chapter of 20th Century history has fallen beyond the Anglophone historians' radar horizon. This paper discusses that episode, its legacy, and perceptions thereof in Turkey today.

Key words: Turkey; Pharmacology; Medical History; History of Pharmacology; Educational Policy; Educational Policy; Government Policy; Nazi persecution; Nazism; Holocaust; Migration; Diaspora; Exile; Higher education.

Introduction

The political tug of war in Turkey today pits the staunchly secular Republicans against the Islamists currently in power. A debate is emerging about the worth of pursuing the EU membership. Injected into the media discussions are memories of Turkey's emerging years. Those years are often glorified as having been full of ideological pursuits and good deeds. In some respects there is a basis for the glorifications. In 1923 Turkey became a secular state with all its ramifications. A new alphabet¹ was created to increase literacy and most significant to the subject at hand is the fact that Turkey's system of higher education including medical education was thoroughly revised. The Istanbul Darülfünun was abolished by the University Reform Law No. 2252 which was passed on 31 May 1933 and Istanbul University was founded on 1 August 1933. 157 of the 240 professors of the Darülfünun were relieved of their duties and were retired.²

Because there were few Turkish citizens sufficiently educated to accomplish these medical/educational reforms, the new government turned the tragedy beginning in 1933 when Nazi Germany expelled many of its citizens from their positions into an op-

portunity for the new Republic. Some 190 eminent intellectuals were invited to Turkey and were rescued thereby³ – a fact hardly known outside of that country.⁴

Their collective impact on all aspects of Turkey's higher education system, was monumental. "In its essence, the affair that we call or understand as Mustafa Kemal Atatürk's (1881–1938) *Üniversite Reformu* was not merely a university reform, but the ultimate apex of the Atatürk cultural movement started in the years 1925 to 1926."⁵

It should be mentioned if but parenthetically that during the 1930s for many of the displaced German intellectuals America was out of reach because of restrictive immigration laws and wide spread anti-Semitic hiring bias at its universities. The fact is that during the 1920s the University of *Breslau* faculty was comprised of a large number of Jewish professors, 25% in the Arts, 45% in Medicine and 48% in Law. The University of Berlin had 45% in Medicine alone; Gottingen had 34% in Mathematics, and Medicine respectively, 40% in the Arts, 47% in Law and Königsberg had 7% in the Arts, 14% in Law, and 25% in Medicine⁶ while Harvard, Yale, Brown, and Princeton combined had not a single Jewish faculty

member up to and through the 1940s. These American Ivy League schools had each kept their faculty *Judenfrei*⁷

The Turkish nation, including members of its Diaspora, remember and continue to acknowledge the émigrés multifaceted impact on Turkish society. Several stories documenting the gratitude felt for the émigrés' contributions have recently been published in Turkish media.⁸ There are memoirs written by the émigrés themselves and by their progeny who were old enough to remember.⁹ Yet in the English language literature this episode/epoch remains history's monumental blind spot.¹⁰

Paul Pulewka

Ord. Prof. Dr. Paul Pulewka was the foundation stone in the establishment of pharmacology and pharmacological controls in our country.¹¹

Paul Pulewka was born on February 11, 1896 in Elbing.¹² He graduated from the *Humanistic Gymnasium Atheneum Elbingense* in 1914 was conscripted into the Prussian army and sent to the eastern front. He learned to care for patients during the war and was himself injured. Later on, he cared for injured soldiers on the western front as a corpsman and provided other first aid service. His war experiences and family advice directed him to qualify for medicine. He began his medicine education in Munich and graduated from Königsberg (Kaliningrad) Prussia, Medical Faculty, in 1923. He went on to receive doctorates in both pharmacology and toxicology from the Pharmacology Institute of the same university.

In the Pharmacology examination an outside examiner Prof. Dr. Hermann Wieland coming from Freiburg impressed Pulewka with his wonderful knowledge. After graduation, Professor Wieland working in Königsberg offered Pulewka an assistantship which he accepted and while working with Prof. Dr. Wieland Pulewka attended to the doctorate program. He won a scholarship from the USA in order to continue his research there but he did not go. This decision also determined his later destiny.

Pulewka went to Tübingen in 1929 on the invitation of Professor Felix Haffner and began to lecture there on toxicology of gases, dusts, war chemicals

and industrial toxic materials. In Tübingen, he began studying microtoxic effects of air pollution on the nervous system which he resumed after coming to Turkey 19 years later.

While Pulewka was working with Professor Wieland, he learned to always consider the therapeutic and toxicological aspects and began his famous studies of toxic effects of *alkalisulphide* and *alkalicyanid* reactions. Wieland was trying to direct him to be versatile and independent. Pulewka performed toxicological studies for the Forensic Medicine Institute as well. He tried to develop methods which had lower margins of error as well as analyzing toxics with classical methods. These studies would be very useful for him when he came to Turkey. When Wieland left Königsberg, Prof. Haffner took his position and Pulewka became associate professor. After Prof. Haffner went to Tübingen, Pulewka became deputy director of the Königsberg Pharmacology Institute in 1927-1928. However Pulewka came down with *exudative pleuritis* a serious illness, shortly before Hitler came to the power and his position was reduced to lecturing. He was faced with a sanction even before Hitler came to power. Later Pulewka would take a stand against National Socialism.

Pulewka is on record sardonically saying while mimicking Hitler's voice, that "German society can only be cured by German plants, synthetic drugs are found by Jews who want to destroy Germans!". Pulewka explained how his students applauded him as smiling including some who began wearing brown shirts. He tells us that: "... however, I will explain you their pharmacology in order to show how harmful synthetic drugs are..." Through these speeches, Pulewka described the situation: "My warnings did not work out, I was kept lonely."¹³

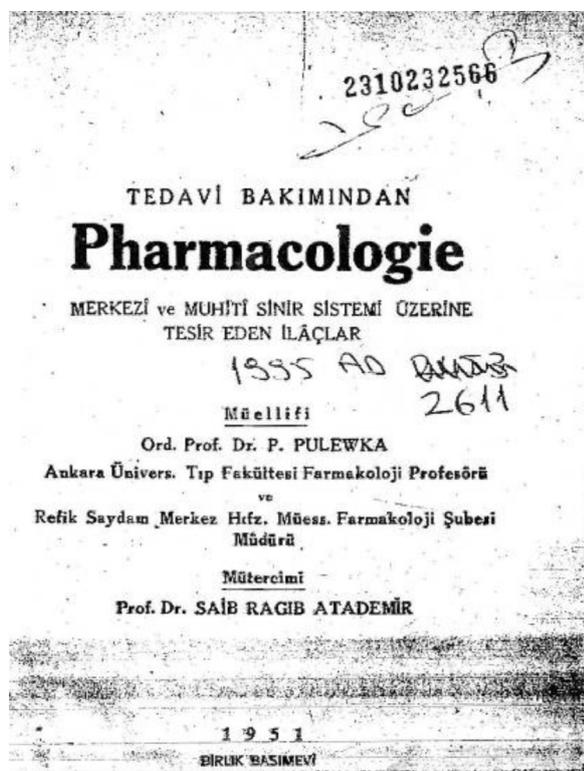
He was forced to leave Germany also because his wife was Jewish.

Behrend Behrens, Paul Pulewka's former assistant whom Pulewka and his wife had once saved from drowning in a sea accident, warned him that he was in serious danger because of his political beliefs. He resigned or was released from his professorship of pharmacy at the University of Tübingen but with help of an anti-Nazi official in the German foreign mi-

nistry the Pulewka's found their way by train to Turkey in October of 1935 (his mother-in-law came Ankara later).

At first he worked for the Central Hygiene (Public Health) Institute of the Ministry of Health in Ankara (founded in 1928). In 1940 his contract was not renewed and he stayed jobless in Turkey until 1941 when he was rehired and in 1946 became Director of the Pharmacy Institute at the University of Ankara. He worked there until 1954 at which time he returned to Germany. Upon return to Germany, he was appointed Professor of Pharmacology at Tübingen University in 1955 and served as the founding director of the Baden Württemberg Toxicology Institute.

While in Turkey, Paul Pulewka founded the pharmacology departments at the *Refik Saydam* Public Health Institute in Ankara and the Medical Faculty of Ankara University. He also administered the *Materia Medica* Institute and served as a member of the Turkish Codification Commission. The most important characteristic of his pharmacological studies is that they were all directed at local and national problems in Turkey.



Front Cover of Pulewka's Turkish Pharmacology Book¹⁴

The following provides an interesting example of the way Pulewka's identified a local need, analyzed the problem, and suggested a simply implementable solution.

Honey has been a popular local foodstuff since time immemorial. Honey from yellow flowers, Rhododendron honey (commonly called crazy honey), according to popular belief along the Black Sea Coast, was more poisonous than that from purple flowers. Hundreds of samples from Rhododendron honey were sent to the institute to be analyzed in order determine the degree of poison contained each year. Since the amount of *andromedotoxin* in the honey, the poison in rhododendron, varied greatly, poisoning cases were frequent. Pulewka's experiments performed on the commonly used *Plugge* color reaction test, showed that this reaction was caused not only by andromedotoxin, but also by non-poisonous products. He therefore switched to a test using mice. Pulewka was thus able to determine the level of poison in a few minutes and with a very small margin of error by the characteristic reflex test on mice. Experiments further showed that in order to eliminate the poison in the honey by heating, the medium had to be sufficiently acidic. Pulewka therefore recommended that the honey be boiled with some vinegar or citric acid added.

Pulewka's work in Turkey

Though there was a clause "He shall work in Ankara University" in the contract, Pulewka was never assigned for such an employment because, the Ankara University was still in the planning process and would open until 1946. In the interim Pulewka founded his own laboratory in the new building of Central Hygiene Institute a part of the Ministry of Health. Since Ataturk wanted to make science strong not only in universities but also in other agencies of the state Pulewka succeeded in obtaining significant amounts of financial support. The Institute was to be a model Institute for the country and a showcase for foreign visitors. Pulewka requisitioned tools from Switzerland, Germany and England for the laboratory. There was a section within the building in which vaccines were being produced. Turkish government wanted to entrust Pulewka for the production of hormone preparations (particularly insulin). The government wanted to be independent of foreign countries for

hormone preparation and to reduce the risk of using ineffective preparations.

Such was not in the purview of pharmacology. However Pulewka developed a tool (since the vacuum distillation mechanism required for industrial production could not be provided in a short time) and managed to obtain relative pure insulin in small amounts.

Establishment of drug control system in Turkey

Since 1927 Turkey had a drug control system. However, the system only controlled the chemical composition of drugs. The usage and hazards of drugs were not being controlled. Real drug controls in Turkey only began with the Pulewka initiatives. Counterfeit drugs (it was very popular in Turkey as in the whole world in these years) were prohibited. A control system was established step by step. Hormone, vitamin, digitalis and salvarsan preparations were evaluated pharmacologically and drugs effective over autonomous nervous system or drugs including substances such as aconitine, veratrine or andromethodotoxin were under custody of the state.

Pulewka was developing quantitative study methods, which were better than known microchemical analysis methods, and these methods later would be combined with newer chromatographic and spectrographic methods.

Toxicity problem of drugs or other consumption materials required more comprehensive animal experiments. Characteristic reaction of iris or respiration system reaction at rats was giving required results in terms of approval or rejection of many pharmacy groups. Pulewka would continue to apply this method successfully in Tubingen later on.

Many drugs were being examined not only chemically and pharmacologically but also serologically, microbiologically or clinically. A final report was being prepared including all these examinations at the Refik Saydam Hifzisihha Institute of which Pulewka was director and the final report was being submitted to the Ministry of Health. The Ministry was approving or rejecting the drug on the basis of this expert report. Since analyses were performed by the institute very strictly, it was seen that many drugs did not include

qualities declared by the manufacturers and had extremely toxic or other kinds of harmful qualities.

Pulewka was rejecting various drug combinations not having therapeutic worth. For example, taking adrenalin orally or lithium salt orally that its solvent effect for kidney stone was only proved clinically. Pulewka authored a negative report for drugs that were not proven in the literature or in his own Institute and clinic for their benefits.

Of course, drug manufacturers whose products were rejected had great antipathy against Pulewka. However, in a short time they too recognized the benefits of these controls to society. Drugs examined in the Institute of Pulewka were not only new drugs. The Institute was also examining drugs existing in the market for years. Thus, Pulewka established an official pharmacological control system in Turkey. While establishing this system, he relied not only on his scientific power but also on his character traits.

Pulewka's Toxicological studies in Turkey

Performance of toxicological studies and consultancy on the subject were among services Pulewka rendered in accordance with his contractual obligations to Turkey. Within this realm fell finding reasons of intoxication and poison sources. Intoxications caused by harmful weeds (weeds including *Datura stramonium* L., *Secale cornutum* L., *lolium temulentum* L., *Agrostemma githago* L., *rhinanthin* etc.) mixed with cereals or mercury or *thallium* mixed with cereals.

As indicated *rhodedondron* honey samples were sent to Pulewka's laboratory from the various Turkish seashores for examination of their toxicity. *Andromedotoxin* as *rhodedondron* toxic could exist in these honeys in various amounts. Pulewka could easily make decisions by evaluating typical reactions of rats to the honey samples.¹⁵

His toxicological examinations revealed massive intoxications among these are: Intoxications due to *arsenic* contamination of drinking water, finding *strychnine* in a vaccine prepared for children that caused nine deaths, finding high rates of *morphine* in bread, finding *pilocarpine* in a hair growth drug sent for examination when it caused nausea and emesis for Ataturk himself and for others, etc.



The original Ankara University Medical Faculty Professor Pulewka is second from the right¹⁶

Narcotic drugs were also examined in this Institute. Police departments kept sending many suspicious substances to the Institute for examining whether they are narcotics or not. Pulewka found that the hemp plant might form various levels of *tetrahydrocannabinol* resin (opium poppy) when grown in some ground and under certain climate conditions. Thus, he protected many hemp producers against false accusation.

Pulewka also fulfilled the demand of the Turkish military for developing a filter for use in cases of a water poisoning.

He developed many effective insect killing drugs and rat poisons. He examined the climate and air conditions whether they affect toxicity of narcotics and local anesthetics or not. He also studied unexpected deaths during surgical operations. He was a member of the Turkey Drug Commission, a commission member at intercollegiate associate professorship examinations, and publication council member in medical journals. Pulewka was one of the editors of the *Türk İjiyen ve Tecrübi Biyoloji Dergisi* [Turkish Bulletin of Hygiene and Experimentale Biology] which was published by the Central Hygiene (Public Health) Institute of the Ministry of Health.

Pulewka's Activities at the University

When the Ankara Medicine Faculty was founded, Pulewka was named Director of its Pharmacology Institute as well as his director at Refik Saydam Institute. He was also the director of *Materia Medica* Institute.

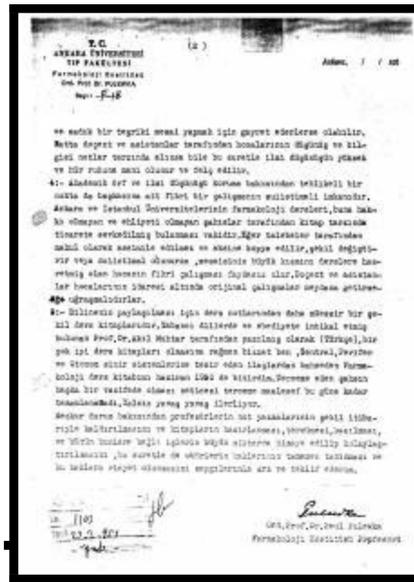
He was teaching his students in this Institute to prepare simple drugs and pharmaceuticals as well as synthetic or chemical drug types. Lectures in this institute were being given by pharmacy professors.

Although Pulewka learned Turkish well in a short time, he gave his lectures in German due to the fact that he was afraid of making any terminological mistake.

Pulewka is on record¹⁷ as saying that he had difficulties in keeping his position after the death of Atatürk. The Health Minister Refik Saydam who was Pulewka's protector lost much political force after Atatürk's death. His agreement ending on November 1940 was not renewed.¹⁸ However "miraculously [his] residence permit was not cancelled."¹⁹ Although Pulewka received an invitation from Dartmouth College at Hanover (Mass./USA) he rejected it because the United States was preparing for war. Later Pulewka tried to go to the USA or Canada but he could not so he considered himself lucky since his residence permit for Turkey was not taken away. Refik Saydam became the Prime Minister in 1941 and called him back. As can be seen from the exhibit below, Pulewka's sojourn in Turkey was not at all times smooth. His problems with university administration became evermore acute following Atatürk's passing in 1938.

A Pulewka letter to the Dean dated February 23, 1951²⁰

Where Pulewka explains to the Dean why he did not provide course notes to students. According to



Pulewka, students should take their own notes and should expand their knowledge by reading other sources. Memorizing notes given to students is a wrong method of teaching. These explanations show that the Dean asked Pulewka for an explanation.

Pulewka, called himself a “Constrained Scientist.” While in Turkey Pulewka had difficulty in doing original scientific studies, as he was expected to serve Turkish society. There was little interest for original scientific studies during the 1930s and 1940s in Turkey. ²¹

One day, while Pulewka was examining the effect of substances including *andromedotoxin*, the Minister of Education visited the Refik Saydam Institute and told Pulewka in no uncertain terms that he should not do basic research on rats because he was expected to serve Turkish society and to transfer his knowledge to his students. ²²

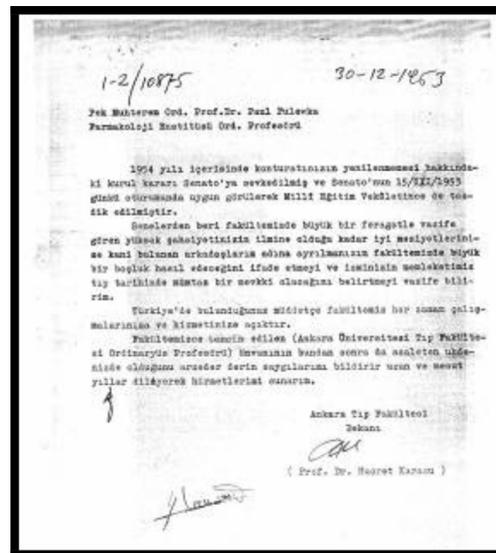
During the 19 years that Pulewka lived in Turkey he traveled widely within the country.

Yet Pulewka was not pleased with Turkey after Atatürk’s passing and in 1953 his tenure there was summarily ended as is shown next.

A December 30, 1953 letter to Pulewka from the Dean 23

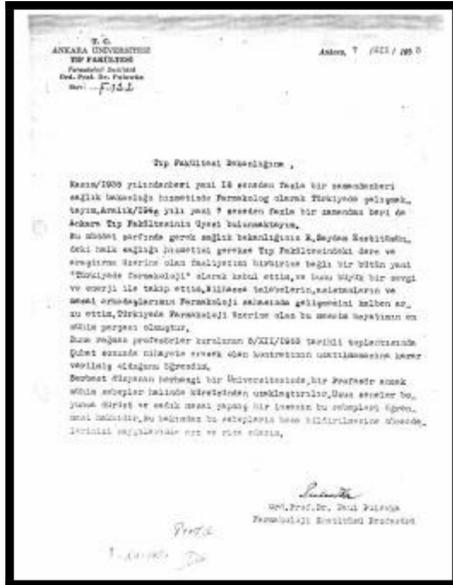
Dear Honorable Professor,
A Board decision about not renewing your agree-

ment for 1954 was conveyed to the Senate and it was approved in the session of Senate in 15.12.1953. It was also accepted by Ministry of National Education.



You have worked in our Faculty with great devotion for years. We appreciate your good qualities as well as being a superior scientist. Thus, your departure will create a huge gap. Your name will always have an outstanding position in the medicine history of our country. You can always use your title as extraordinary professor given by our faculty. I present my deep respects and wish you a long and happy life.

Dean of Ankara Medicine Faculty,



A letter from Pulewka dated July 12 1953 to the Deanship of the Medicine Faculty²⁴

I have been working as a pharmacologist for the Ministry of Health in Turkey since November 1935, in other words for more than 18 years. I have been a member of Ankara Medicine Faculty since December 1946, namely for more than 7 years.

During this period, I both performed public health service in Refik Saydam Institute of Ministry of Health, taught courses, and did research at the Medicine Faculty as a whole. I heartily encouraged students, assistants, and my colleagues to develop within the pharmacology field. My studies on pharmacology in Turkey became the most important part of my life. However, I found out that my agreement which will expire in the end of February was decided not to be extend at the board meeting of professors dated as 5.12.1953.

A professor in any university within the free world is dismissed from his position only for serious reasons. An individual who worked honestly and loyally for long years desires to know the reasons. Thus, I ask you to inform me about these reasons.

For various socio-political and economic reasons prevalent in the country Pulewka's latter years in Turkey were not smooth to wit. "In the year of 1944, Turkey renounced it's political relations with Ger-

many and declared war. Meanwhile, the non-Jewish Germans were arrested. In order to be protected, Turkish Nationality was suggested to me. However, I refused this proposal. In the end of a long period of uncertainty, it was decided that the German Doctors in the country were needed and for the that reason, the idea for their arrests was given up."

Nonetheless, my status in the University became difficult. It was stated that after the Turkish educators were brought up, the foreigners were to be drawn back or become Turkish Citizens. A guard was provided to me after I received un-signed letters threatening me with death unless I become a Turkish Citizen..."

"I wrote a book on Pharmacology. The publication of the textbook was a main reason for my loss of job. This was also true with the other emigres. Because the successor professors were now able to use the published books."²⁵

"The students were generally on respectful and friendly behaviours. However, I did encounter demonstrations in which the hostilities for the foreigners were."

Pulewka became guest professor at Tubingen University in 1954 and was appointed to the newly founded toxicology professorship in 1957. The rapid growth of industry required toxicity to be studied. Pulewka retired in 1964.

Perceptions of the Émigrés in Turkey Today

Memories of the émigré professors and the appreciation of their contributions to Turkey's modernization linger on in that country and among the educated Turkish Diaspora. Recently several symposia were devoted to keeping the memories alive. One conference organized by the Turkish Academy of Science (TÜBA), was devoted to "The Evolution of the Concept of University in Turkey (1861-1961)" (November 18, 2006). At the meeting, the evolution of the "university" concept during a 100-year time span was discussed. Much of the discussion focused on Atatürk's university reforms, the realization of which was attributed to the émigrés from Germany. Significantly on April 7, 2006, the University of Istanbul conducted a symposium on the 1933 University Re-

form. The conference opened with a welcoming speech by Dr. Mustafa Keçer, the dean of the Istanbul Medical Faculty, who reiterated that "Turkey owes a great debt to the émigrés. They did great work here, although some jealous colleagues tried to denigrate them." Reiner Möckelmann (b. 1941), the recently retired German consul general in Istanbul, organized two symposia at the consulate. One, on November 29, 2005, dealt with the contributions to Turkey's legal system by the émigré contingent of legal scholars.²⁶ The other, on August 6, 2006, dealt with the contributions of the medical contingent.²⁷



A student presenting a bouquet to Ord. Prof. Dr. Pulewka²⁸

Concluding remarks

Since Stephen L. Parente and Edward C. Prescott used the words "ideas," "knowledge," and "technologies" interchangeably in their Nobel-winning development rationale²⁹ it can be concluded that the transfer of 190 intellectuals/professionals while at the cutting edge of knowledge in their respective fields, and providing them with all necessities to adapt and continue their work in a rather different society is tantamount to the transfer of much technology. So it was in this situation. Pulewka alone transferred much knowledge and technology to a country thirsting for same.

When the émigrés arrived, Turkey had two fledgling universities.³⁰ It now has over seventy and most offer medical curricula. At least two generations of educated Turks owe their positions to the implementation of those reforms and Turkey's entire population owes its health status to those reforms. Turkey's unfortunate brain-drain has contributed to medical education and practice in all western countries.

Decades later, it is fair to say that while the émigrés' sojourn in Turkey was an episode, their legacy is an epoch. Significantly, it is so recognized by knowledgeable people in Turkey and among the educated in the Turkish Diaspora today. Because all the above is true for all of the intellectuals and professionals saved by Turkey this paper offers a "story" to "create a context of origin, that the people may not live alienated from their ancestry and in ignorance of the events that have given shape to their present."³¹

Epilogue

Decades later at the March 5-7, 1996 Congress *Ord. Prof. Dr. Paul Pulewka: On the 100th Anniversary of his Birth* held, in Uludağ, Bursa, the Turkish Pharmacological Society recorded its recognition that the "founders of pharmacology in Turkey were Prof. Dr. Akil Muhtar Özden, İstanbul University, and Prof. Dr. Paul Pulewka, Ankara University"

Explanation

This paper is partially based on Arnold Reisman, *TURKEY'S MODERNIZATION: Refugees from Nazism and Atatürk's Vision*. New Academia Publishers, Washington, DC. (2006). However much of the factual materials on Pulewka's work while in Turkey and all correspondence documents are from more recently discovered sources obtained from Ankara University Personnel Office Archives.

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3. One way to recognize the caliber of people involved is to note that prior to, during, and after their exile in Turkey at least sixteen of them are known to have corresponded with Nobel laureates including Max Von Laue, James Frank, Linus Pauling, Max Planck, Max Born, Erwin Schrodinger, Neils Bohr, Enrico Fermi, Herman J. Muller, Albert Szent-Györgyi, Bertrand Russell and Albert Einstein.

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8. See *Cimen Gunay-Erkol and Arnold Reisman* "The Founders of Turkey's System of Modern Higher Education: An Anthology of Testimonials from First, Second, and Third Generation of Students." (2007) Working paper. Available from the authors.
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17. Wienfried Kruppa, p. 313
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