

THE HUNGARIAN PHENOMENON IN ISRAELI SCIENCE

Gábor Palló, Hungarian Academy of Science

The Hungarian Phenomenon in the History of 20th-Century Science

Around the turn of the century, an exceptionally gifted intellectual generation was born in Hungary. It was a result of an unprecedentedly peaceful period of the otherwise stormy history of the country, which came about after the establishment of the dual Austro-Hungarian Monarchy in 1867. This generation produced the musicians Béla Bartók and Zoltán Kodály, the psychologists Sándor Ferenczy and Imre Hermann, the philosophers György Lukács and Károly Mannheim, the economists Károly Polányi and Miklós Kádor, the movie maker Alexander Korda, and the writers Mihály Babits and Frigyes Karinthy.

In this extremely fertile soil a whole galaxy of scientific geniuses was also formed. The names of George von Békésy and George von Hevesy, Eugene Wigner and John von Neumann, Leo Szilárd and Edward Teller, Michael Polányi and Theodore von Kármán, Albert Szent-Györgyi, and Dennis Gábor became well known all over the world, particularly, since many of them won the Nobel Prize and played crucial roles in developing the atomic bomb. These scientists formed a more or less closed circle and constituted what I call the Hungarian phenomenon in 20th century science. I define the latter this way. 1) Although the sciences in Hungary did not exceed an average level at that time, Hungarian culture produced a highest-level group of scientists. 2) Compared to the size of the population, the number of

these highest-level scientists was exceptionally large. 3) These scientists, after a Hungarian middle class education, left the country and achieved their success outside the country, mostly in the United States. 4) The scientists under discussion formed a group, or at least a network; that is, they established contacts (a) to each other, (b) to the other Hungarian emigrants, and (c) kept their contacts with the Hungarian scientific community. 5) The group had some characteristic features that distinguished it from other scientific groups, and these features can, in principle, be described.

This paper raises the question as to whether the Hungarian phenomenon existed in several countries or only in the United States, and, particularly, whether or not it existed in Israel. What kind of roles in general did the Hungarian natural scientists play in Israel? Since many of the above mentioned scientists were of Jewish origin, the question is more than justified.

Early Science in Palestine

In answering these questions, it should be taken into consideration that most of the Hungarian-phenomenon scientists left Hungary around 1920, when the right-wing and antisemitic Horthy government took over. They moved to America or Great Britain from Germany when the Nazis won the 1933 election. Though the international Zionist movement, headed by Theodor Herzl (a graduate of the Budapest "fasori gimnázium," the same high school as Neumann and Wigner's), was officially established in 1897, it was only in 1917 that the Balfour

declaration promised the establishment of a Jewish national state in Palestine, a distant part of the Ottoman empire. During the 1920s, under British administration, Jewish immigration into Palestine began to grow and, because of the Holocaust, by the 1940s the country became a target of the large Jewish exodus from various countries.

For the first wave of the migrating Hungarian scientists, including Szilárd, Neumann, Wigner, and Teller, around 1920, Israel could not compete with Germany, with its lively scientific life, its modern laboratories, and great personalities. The primary goal of these scientists was to study and to become not just good but brilliant experts. Israel at that time could not offer very much to these ambitious young people.

Though the idea of establishing a Jewish university preceded even the first Zionist Congress, and Herzl also supported the idea, the Hebrew University's twelve foundation stones, symbolizing the twelve tribes of Israel, were laid "on the barren crest of Mount Scopus" in Jerusalem only in 1918 (1). It was opened in 1925, one year later than the Technion, the institute of engineering, which also was a result of an old desire to create



Albert Szent-Gyorgyi, *courtesy Oesper Collection*

a school for training Jewish immigrants who would establish the industry in the country. This idea came up as early as 1901, and in 1912 the Sultan gave permission to erect three buildings for the purpose on Mount Carmel, in Haifa. The institute was finally opened for 18 students in 1924 (2).



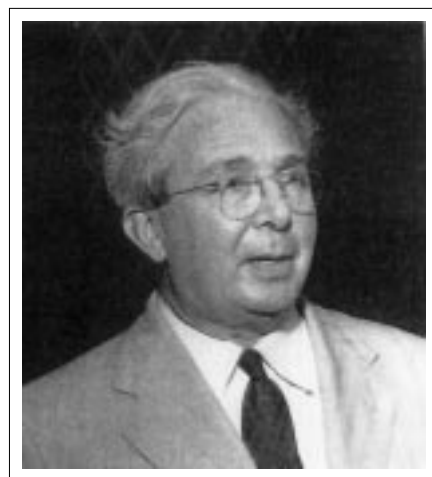
George von Hevesy, *courtesy Oesper Collection*

These institutions were new then, and for the young geniuses they could not offer a promising scientific atmosphere built on a long tradition and with well-equipped laboratories; neither could the Daniel Sieff Research Institute, the predecessor of the Weizmann Institute. It began its work in 1934, but, as a visitor described, "It was a small, isolated research outpost, situated practically in the desert. Visitors were lodged in a small clubhouse attached to the Institute, and during the night they could hear the jackals howling in the nearby orange groves (3)." This institute grew into a really large and significant scientific center only after 1949, upon the foundation of the Weizmann Institute.

All the other higher education institutions and scientific centers are much younger. Bar-Ilan University was inaugurated in 1955, Tel Aviv University in 1956. Teaching began in 1963 at Ben Gurion University, in Beer Sheva, Negev; but it was ceremonially opened only in 1969. These could only give research and teaching opportunities for the postwar immigrants.

The Hungarian-phenomenon Scientists in Israel

Israeli conditions before the second World War could compete neither with Germany's lively scientific life nor with the unlimited possibilities in the United States. Still, some eminent Hungarian scientists had very significant relations with Israel.



Leo Szilard, *courtesy Oesper Collection*

Leo Szilárd had been introduced to Weizmann, an excellent chemist before rising to become the head of

the international Zionist movement and then the first President of the State of Israel. Michael Polányi, the physical chemist, later philosopher, suggested that Weizmann consider Szilárd as a possible faculty member, when Weizmann was working hard on organizing a physics institute at the Hebrew University. Polányi, directing one of the departments of the Kaiser Wilhelm Institut für Physikalische Chemie in Berlin/Dahlem, formed an informal group around him consisting of well known young Hungarians. The director of the institute was Fritz Haber, the Nobel laureate discoverer of the ammonia synthesis and for many reasons the leading personality of the German chemistry community, who greatly appreciated the whole group. Haber, with another classic figure of chemistry Richard Willstätter, also tried to mediate between Szilárd and Weizmann; but, for unknown reasons, the effort did not succeed (4).

Eugene Wigner, on the other hand, invited to visit Jerusalem in 1935, was offered the professorship of physics at the Hebrew University. Unlike Szilárd, Wigner was inclined to accept the position but finally refused, because he felt he would lessen the chances of his close friend and colleague, Ladislaus Farkas, when he, Wigner, already had a post in the United States, and Farkas had no other suitable opportunity. Wigner paid many visits to Israel later, gave important talks, and participated in meetings, by which he contributed to the nuclear physics of the country, including the work of the Dimona reactor in Negev (5).

Edward Teller's involvement began in the 1960s and has continued up until the present. His closest friend and colleague, the nuclear physicist Yuval Ne'eman, cooperated with him in many important matters concerning the application of nuclear power to various engineering goals, such as digging a canal through the desert. Ne'eman characterized Teller's Israeli role this way (6):

Edward has met and talked at length with every Israeli Prime Minister or Minister of Defence since 1966.

As a committee member, he advised the experts on the defense technologies, nuclear reactor technologies, and other related matters. Teller was also of help to the larger Israeli scientific community. He gave courses at Tel Aviv University and initiated the establishment of the Faculty of Engineering there, the first dean of which became Yuval Ne'eman. For his contributions the Technion awarded Teller its Harvey Prize. "Edward Teller," wrote Ne'eman, "has taken up his share in Israel's worries—and has also brought Israel closer to

Western values and closer to the USA (6)." Besides Wigner and Teller, other Hungarian-phenomenon scientists also visited Israel several times. Kármán described stories about his visits in his biography. Denis Gábor, Nobel laureate physicist, and Nicholas Kürti, professor of physics in Oxford and fellow of the Royal Society, maintained their relations with, among others, Ferenc Körösy, professor of chemistry at Ben Gurion University (7).

The First Hungarian Immigrant Scientists to Palestine

Despite the unfavorable conditions in the early years, some very significant Hungarian scientists moved to Jerusalem to be

part of Hebrew University. Among the earliest professors was Mihály (Moshe) Fekete (1886-1957), one of the exceptionally creative mathematicians of his time, who, with his masters, Lipót Fejér and Manó Beke, greatly contributed to the formation of the Hungarian phenomenon. His works on the theory of numbers,



Edward Teller, *courtesy Oesper Collection.*

and numeric sets made him a well known scientist while still quite young. Besides Budapest, Fekete studied in Göttingen, the center of mathematics at that time. After returning to Budapest in 1914, he completed his Habilitation at Budapest University and gained an assistant position there, which he soon lost for political reasons. In 1919 and 1920 totalitarian regimes of various colors followed each other, and many great Hungarian scientists or their families suffered as a result. As a gifted teacher, Fekete was advised to accept as a private student an especially talented high school boy, because the level of this boy far exceeded everything expected in a high school. His name was John von Neumann. In this way, Fekete be-

came Neumann's first instructor in higher-level mathematics.

Realizing the lack of opportunity to find a university position in Budapest, Fekete decided to move to Jerusalem in 1928. He soon adjusted to the new surroundings there and became a most important personality in the university. He imported to Israel the special Hungarian style of mathematics. With his scientific and teaching abilities, he soon became a professor in the Einstein Institute of Mathematics and contributed to the establishment of the faculty of science and to increasing opportunities for research in the field of natural sciences in general. It was quite an accomplishment if one considers that in the university founders' goal there was only "the glorious spiritual past traditions of Judaism, and the burning, irresistible desire to revive them (8)." Fekete and his fellow scientists established an alliance with the head of the Academic Council of the University, Chaim Weizmann. For a while, Weizmann's successor in the Academic Council could be of help; he was Albert Einstein. To be more effective, Fekete worked as Dean of the Faculty of Science several times and became the Hebrew University's rector between 1945 and 1948. Before his death in 1957, he was awarded the Israel Prize, the highest distinction of the country (9).

The Chemistry Clan: First Generation

The Hungarian phenomenon in Israel was more evident in chemistry than in mathematics. Indeed, a news item stated that Andor Fodor "...was the university's first teacher, and that he had been invited by Dr. Chaim Weizmann to organize its Chemistry Institute, which became the cornerstone on which the future Faculty of Science was based (10)."

Fodor was born in Budapest in 1884, graduated from high school in Graz, and conducted his chemistry studies at the Budapest Technical University and ETH in Zurich. He began his scientific career as an organic



John vonNeumann, courtesy Oesper Collection.

chemist there, then continued in Stockholm and Berlin. Fodor became *Privatdozent* in physiological chemistry in Halle in 1919, then "...reached the conclusion that the situation of the Jews was such that they would be forced to seek a secure refuge for themselves (11)." He became a Zionist and moved to Jerusalem in 1923, where he accomplished the pioneering work of establishing modern chemistry, including a building, at the opening of the Hebrew University. The very first classes in chemistry and many significant scientific results came from Fodor's institute. His memorable scientific activity embraced various fields of organic chemistry, biochemistry, and colloid chemistry, for which he produced a book in 1925 (12). However important Fodor's activity was, he has been severely criticized for being overly ambitious. He gained the reputation of exploiting his junior associates as slaves, which poisoned the atmosphere of the institute. Weizmann definitely had to take some action. In a letter Weizmann wrote, "The setting up of a natural science faculty should begin immediately. This would, first of all, break the rule of the so-called biological clique, Klinger [a biologist professor]—Fodor *et tutti quanti* (13)."

This was a difficult period in the history of the university because the leaders had to decide about the model they wanted to apply. Einstein favored the German, Judah Leon Magnes, the University Chancellor, the American model. Einstein became disappointed in this controversy and refused the professorship in the physics institute. Weizmann had to seek other scientists to occupy the positions in the physics department (which proved very difficult) and in the chemistry institute, to balance Fodor's influence. Wanting to employ a physical chemist, he chose another Hungarian, L á s z l ó (L a d i s l a u s) Farkas. "Personally I don't know him at all. But I think," wrote Weizmann, "he is one of the best young physico-chemists, if not the best of them. I know that Fritz Haber has this



Michael Polanyi

opinion and so, I may say, had Rutherford (13).” In fact, they had already corresponded one year earlier, when Farkas, on Szilárd’s suggestion, described his ideas about producing purified water. At the end of his long letter, Farkas wrote to Weizmann (14):

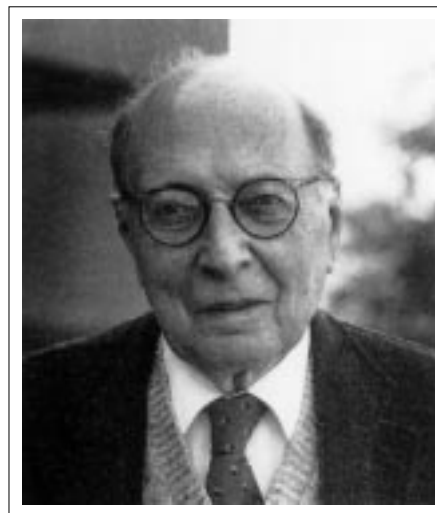
Ich versichere Sie, falls mir Gelegenheit gegeben wird, in Palästina zu arbeiten, dass ich meine ganze Kraft daran setzen werde sowohl in wissenschaftlicher Hinsicht wie auch in der Bearbeitung technischer Probleme, die das Land betreffen, mein Bestes zu leisten (14).

Ladislaus Farkas was born in Dunaszerdahely in 1904 and was two years older than his brother Adalbert, whose life and career run parallel (15). They graduated from high school in Hungary but became chemical engineers in the Viennese Technische Hochschule; and then both began to work in the Kaiser-Wilhelm Institut für Physikalische Chemie. In 1928 the director of the institute, Fritz Haber, accepted Ladislaus as his personal assistant. By that time the Farkas brothers had done beautiful work on *ortho* and *para* hydrogen and on deuterium, and they soon became well known experts on hydrogen. In the Berlin institute they became part of the group of the Hungarian-phenomenon scientists around Michael Polányi; and, because Wigner was Polányi’s graduate student, Ladislaus developed a lifelong friendship with him also (16).

The Farkas brothers’ exceptionally promising career was interrupted by the Nazis in 1933. All the important people around them, Haber, Polányi, Wigner, and Szilárd had to leave Germany. Both Farkases found only temporary positions in Rutherford’s laboratory, then in the Institute of Colloid Chemistry in Cambridge; and, although Szilárd and Polányi tried to help them, they were probably not happy with the positions finally opened to them in English industry or at Bristol University (17). Thus, Weizmann’s invitation to Ladislaus to become a professor in Jerusalem could not have arrived at a better time. Zionism played no role in his immigration to Palestine (18). Adalbert followed a year later in 1936 and remained until 1941, when, in spite of the major efforts by many scientists, including Albert Einstein, he could not receive more funds in the country (19). With his American wife, Adalbert settled in the United States, where he has continued to live.

In the 1930s the brothers could continue their fruitful scientific investigations and participate in the life of the international scientific community. The institute worked well; it was rather well equipped and had a growing number of graduate students. Ladislaus proceeded

with his hydrogen studies and extended his interests to the hydrocarbons. As they wanted to contribute to Israel’s industry, they expanded their research subjects toward practical problems. Adalbert, for instance, invented a new type of wrapping paper to



Eugene Wigner, courtesy Oesper Collection.

preserve oranges during transportation. Ladislaus was appointed head of the Central Committee for the Development of the Chemical Industry in Palestine in 1939. This proved particularly important during the war, when the institute produced glassware and chemicals needed by the army and did research on the utilization of the country’s raw materials, etc. Farkas’ ingenious activity reminds one of his Hungarian colleagues’ activities in the United States that were vital in developing the atomic bomb. He became the scientific secretary of the Scientific Advisory Committee to the Palestine War Supply Board, just as Kármán, Szilárd, and Neumann participated in similar committees in America (20). After the war, Ladislaus Farkas made tremendous efforts to develop his institute by replacing old instruments and redirecting research toward pure science. He died in an airplane crash in 1948, en route to purchase scientific instruments in the United States.

Farkas introduced modern physical chemistry to Israel, and he imported the Hungarian-phenomenon mentality of working in the most competitive front line of science and of applying the latest theoretical approaches. He was part of this group. One of his Hebrew University graduates, Michael Szwartz, moved to Manchester to work with Polányi (21). Polányi contributed to the Farkas Memorial Volume edited by Adalbert and Wigner (22).

The Chemistry Clan: Second Generation

The later developments of the physical chemistry department and of chemistry in Israel showed Farkas’ great impact. After his accident, the leaders of the university

approached Adalbert to occupy his brother's vacated chair. This seemed an obvious solution, and Adalbert considered it seriously, but finally decided against it, saying that he had built up a new existence and home in the US (23).

The new permanent head, and real successor, was also a Hungarian and former student of Farkas: Gabriel Stein, born in Budapest in 1920. After graduating from a Budapest "Realgymnasium," he immigrated to Palestine in 1938 and received his masters degree as Ladislaus Farkas' student. He earned his Ph.D. under another former Haber student, Joseph Weiss, in Durham, England, where Stein remained until 1951 (24). Then he returned to Jerusalem and joined the department of physical chemistry, where he soon became head. Gabriel Stein led the department back to the direction set by Farkas and elevated the scientific level to its former height. It is also Stein's achievement that two of his students, Joshua Jortner and Raphael B. Levine, became two of the most prominent physical chemists of the country (25).

In the early 1970s, the Hebrew University chemistry departments were reorganized, and as a result a major institute was set up. This time another Hungarian was appointed the head of the institute: Saul Patai, editor of the book series *The Chemistry of Functional Groups*, comprising 100 volumes. The Patai family immigrated to Palestine in 1938, as traditional Zionists. Raphael Patai, Saul's brother, who died recently, was a famous cultural anthropologist and linguist. One of his last works was the book, *The Jewish Alchemists*. Their father, President of the Pro Palestine Association, had visited Palestine many times before the family settled there. Saul, born in Budapest in 1918, attended the university in Budapest for two years and then became a student of Andor Fodor; but he received his masters degree under Ladislaus Farkas in 1941. In his main research fields—the mechanism of organic reactions, the reactions of olefins, and the chemical reactions in solid state—he achieved important scientific results. Patai, like many other prominent Hungarians, contributed to defense-related research; after the Yom Kippur War, he organized a research group devoted to such subjects (26). He died in 1998.

The Chemistry Clan: Third Generation

The third generation of Hungarian chemists arrived in Israel after the 1956 Hungarian revolution. Its two outstanding personalities are Ferenc Körösy and Ruben

Pauncz, both foreign members of the Hungarian Academy of Sciences, and neither of them associated with Hebrew University. Both began to work at the Technion, but Körösy, contrary to his own wishes, soon moved to Beer-Sheva. They were not the first Hungarians at the Technion. In addition to several engineers (P.W. Ernst, A. Gileadi, B. Kinori, M. Vajda) and the famous mathematician Paul Erdos, who never lived permanently anywhere, but regularly taught at the Technion as a visiting professor (27), they also met at the university Shlomo Bien, a former graduate student of Géza Zemplén's famous organic chemistry school at Budapest Technical University (28).

Ferenc Körösy, born in Budapest in 1906, also belonged to the group of the Hungarian-phenomenon scientists and was in contact with many of them. Teller, his old friend, was his classmate at the university in Karlsruhe. While Teller changed to physics, Körösy continued as a chemist and returned to Budapest to occupy a position in the laboratory of the Tungstam factory, probably the only high tech plant in Hungary in the period between the wars. As a result, he was involved in the research and development of the krypton bulb, the greatest innovation of the factory. This laboratory employed many of the best scientists of the time, including Michael Polányi, who was living permanently in Manchester, and for a shorter period even Denis Gábor and Edward Teller.

The Körösy family had a long Zionist tradition, the reason why Ferenc Körösy decided to move to Israel. By 1957, however, when he could realize his plan, he was over fifty; and it was not easy to begin a new career. Nevertheless, he worked on very important projects in Israel, mostly in inorganic chemistry, and found satisfaction with his new life (29).

Ruben Pauncz, born in 1920, achieved immediate success upon his arrival in Israel. In Hungary, working at Szeged University, he was the first scientist engaged in quantum chemistry in that country. In Israel, as the Technion chemistry faculty was modernizing the curriculum in the middle 1950s, Pauncz was instrumental in introducing quantum chemistry. As a result, right after his arrival in 1957, he was able to begin teaching and could continue his productive research work on, among other things, the application of the quantum chemistry methods to alternate hydrocarbons, in cooperation with his colleagues in Uppsala and Florida. He published four books in English on quantum chemistry. In this way, Pauncz fits into the long series of Hungarian sci-

entists who contributed to the knowledge transfer into Israel. Although he never belonged to a specific scientific school, since he was self taught in the new discipline, Pauncz brought his knowledge with him from Szeged. This is how he also became the first quantum chemist in Israel, his second home. Endowed with exceptional teaching abilities and recognized as a most popular professor of the university, Pauncz trained generations of gifted quantum chemists, who by now have established a lively professional community at the Technion (30).

Conclusions

Without surveying the entire, long list of Hungarian scientists, one can conclude that, in fact, there existed a Hungarian phenomenon in Israel. It would also be worth investigating the history of Hungarian social scientists, including Joshua Blau, a Hebrew and Arabic linguist and the only Hungarian member of the exclusive Israeli Academy of Science, or Joseph Ben-David, an excellent sociologist, formerly a chemist, who exerted a great impact on the sociology of science not only in Israel but throughout the world. However, on the basis of the analysis of only the most significant cases of natural scientists, some important features of the Israeli Hungarian phenomenon have been identified. 1) Quite a few Hungarian scientists settled in Israel, and many were in close contact with the most famous ones. They can be considered a part of the Hungarian-phenomenon group, or perhaps an Israeli extension of it. Even some of the greatest Hungarian scientists had direct or indirect involvement in Israeli science. 2) Unlike in the US, where the physicists had the most eminent roles, in Israel the chemists became the most successful. 3) Zionism often played a part in their migration to Israel, but this Zionism was positive in the sense that it was a stance for Israel and not against Hungary. 4) Some characteristic features of the Hungarian scientists became evident: their modern theoretical approach and a frequent combination of this theoretical inclination with a practical orientation. These features, in an atmosphere of special political awareness, resulted in success in the military-related fields. 5) The Hungarians contributed to the knowledge transfer into Israel in two ways. First, they represented the most advanced level of their scientific field; and, second, they brought with them the fertile Hungarian culture and middle-class life style.

ACKNOWLEDGMENT

I would like to express my gratitude to the European Committee of the Weizmann Institute and for the OTKA 1994 T 017964 for supporting my research. Many people gave me valuable assistance in the work: Joel Feldmann, Marika Gordon, Ety Alagem, and all those who replied to my persistent questions. I must thank them very much for their help.

REFERENCES AND NOTES

1. To establish the Hebrew University had been attempted many times. The quotation is from a university yearbook, The Hebrew University Jerusalem, Hebrew University, Jerusalem, 1957, 1.
2. A concise history of the Technion can be found in Zippora Boneh, Ed., Technion's Undergraduate Catalog, (translated by Debbie Siegel Miller from Hebrew into English) Madan Press, Nazareth, 1994/5, 7-8.
3. The quotation is from a booklet found in the Weizmann Institute: E. B. Chain, "Research at the Weizmann", text of an address delivered October 16, 1958, New York, NY, p 3.
4. M. Polányi wrote to Weizmann from Manchester, "I am ready to go to London if my presence can be of use to promote the affairs of Szilard." Polányi to Weizmann, June 27, 1935. Weizmann Archive (WA) file 1829. - Willstätter "with regard Szilard's affairs shares your view." Weizmann to Polányi, July 5, 1935. WA file 1831. Donnan also recommended Szilárd. Donnan to Weizmann, June 11, 1935. WA. File 1824. Haber's letter was undated. WA File 1712.
5. G. Palló Interview with Eugene Wigner, Princeton, NJ, November, 1983.
6. Yuval Ne'eman, "Like everybody else but more so...: Jewish Destines, Martians and the State of Israel," in G. Marx, Ed., *The Martians: Hungarian Emigré Scientists and the Technologies of Piece and War 1919-1989*, Proceedings of 23rd Symposium of the International Committee for the History of Technology, Budapest, August 1, 7-11, 1996, Eötvös University, Budapest, 1997, 123-144.
7. "Környezetem tele volt kiváló emberekkel" ("My surroundings were full of excellent people."), G. Palló's interview with Ferenc Körösy in Israel, *Fizikai Szemle*, **1996**, 9, 309-311.
8. E. B. Chain, "Research at the Weizmann," p 4-5.
9. For Fekete's activity see his personal files, Central Archives of the Hebrew University of Jerusalem (CAHJ).
10. The Hebrew University of Jerusalem, March 4, 1954. Professor Fodor honored by Hebrew University on his seventieth birthday. Andor Fodor personal files. CAHJ.

11. Professor Fodor will be 60 on March 3. Andor Fodor personal file. CAHUIJ.
12. A. Fodor, *Die Grundlagen der Dispersoidchemie*, Verlag von Theodor Steinkopff, Dresden und Leipzig, 1925.
13. B. Litvinoff and G. Sheffer, Ed., *The Letters and Papers of Chaim Weizmann*, Transaction Books, Rutgers University, Israel University Press, Jerusalem, 1978, Vol. XVI. Series A, June 1933-August 1935, 440: Letter to Salma Schocken, April 24, 1935.
14. "I can assure you that if I had the opportunity to work in Palestine, I would do my best to do research not only on scientific, but also on the technological problems that the country needs to be solved." Farkas to Weizmann, March 2, 1934. WA. file 1726.
15. For the Farkas brothers and their times in Jerusalem, see M. Chayut, "From Berlin to Jerusalem: Ladislaus Farkas and the Founding of Physical Chemistry in Israel," *Historical Studies of Physical and Biological Sciences*, **1994**, 24, 237-263.
16. G. Palló interview with Wigner, Princeton, NJ, November, 1983.
17. Adalbert and László Farkas Files, Archives of the Society for Protection of Science and Learning, Bodleian Library, Oxford.
18. Ref.15, p 251.
19. For Einstein's intervention, see two letters addressed to Einstein in the Adalbert Farkas personal file, CAHUIJ.
20. For details of the Farkas brothers' activity, see Ref. 17 and 21.
21. Ref.15, p 263.
22. A. Farkas and E. Wigner, Ed., *L. Farkas Memorial Volume*, Research Council of Israel Special Publication, Jerusalem, 1952.
23. Adalbert Farkas' letter, May 1, 1950. The correspondence on the matter is in the Adalbert Farkas personal file, CAHUIJ.
24. For Stein's biographical data I am indebted to Professor Saul Patai. Telephone interview with Saul Patai, March, 1996. The most important data are listed in the university yearbooks. The Hebrew University Jerusalem, Hebrew University, Jerusalem, 1969, p 500.
25. Ref. 15, p 263.
26. For Saul Patai's biography, see Patai's personal file, CAHUIJ. Most of my text is based on Professor Patai's personal statements, Telephone interview with Saul Patai, March, 1996.
27. For the Hungarians at the Technion see Catalogue Technion Israel Institute of Technology, Haifa, Israel, 1964 and 1970. According to my estimate, about 5% of the faculty listed was of Hungarian origin.
28. Interview with Shlomo Bien, Haifa, Israel, March, 1996.
29. For Körösy's life, see "Környezetem tele volt kiváló emberekkel." ("My surroundings were full of excellent people." (G. Palló's interview with Ferenc Körösy in Israel), *Fizikai Szemle*, **1996**, 9, 309-311. He passed away in January, 1997.
30. For the biography of Ruben Pauncz see G. Palló, "Az első kvantumkémikus Magyarországon: Beszélgetés Pauncz Rezső akadémikussal," ("The first quantum chemist in Hungary: an interview with R. Pauncz, member of the Academy"), *Magyar Tudomány*, **1997**, 1, 91-97.

ABOUT THE AUTHOR

Dr. Gabor Palló is Director of Research of the Institute of Philosophy of the Hungarian Academy of Sciences, POB 594, 1398 Budapest, 62 HUNGARY.