WHY DID GEORGE VON HEVESY LEAVE HUNGARY?

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Summary

George von Hevesy was appointed professor to the University of Budapest during the Hungarian Soviet Republic (1919). After the fall of this regime these appointments were not recognized, and Hevesy's right to lecture as privatdozent was withdrawn by disciplinary action. Hevesy foresaw the political, economical and moral decline of the country under the white terror regime that followed. For these reasons he left Hungary for good to work abroad.

In the followings the story of a petty affair will be called up in which scientists of lesser talent, but enjoying political support, charged and passed sentence upon a brilliant personality standing pre-eminent among them, without considering to what extent they contributed to the impoverishment of Hungarian scientific life[1].

The suffering central figure of the story is George von Hevesy, laureate of the 1943 Nobel prize in chemistry. His outstanding scientific merits and the major stages of his career have frequently been appreciated; little mention was made, however, of the reasons why he left Hungary. His departure is just accepted with regret in Hungary, as in the case of so many world famous Hungarian-born legendary scientists such as George von Békésy, Albert Szent-Györgyi, Dennis Gabor, Eugene Wigner, or John von Neumann, Leo Szilard, Theodore von Karman, Edward Teller and others. Moreover in Hungary their emigration is generally considered as something almost natural, with obscure hints at higher-developed conditions in Western Europe and the United States, and deeply regretting the scientific backwardness of Hungary at the period of their emigration.

However, the reason of their leaving cannot be readily found out in all cases, not even whether the attracting power of the foreign country or the repelling power of the native land was predominant. George von Hevesy's story is exceptionally clear from this point of view. After the fall of the short Hungarian Soviet Republic in 1919 he was submitted to a petty political

screening procedure and was found guilty. He preferred to leave to find a purer atmosphere and substantially better work conditions in Copenhagen, one of the most noted centres of modern science. Similarly to his colleagues, however, this was not a dramatic decision; he did not declare, after a sleepless night passed in anguish, that he had decided to emigrate, or something similar. He simply chose a new workplace, which actually was in another country, without, however, giving up his mode of living, his culture, his Hungarian identity, as might be presumed on the basis of some alienated logic. Whenever he had an opportunity, he came home, he continued to spend his holidays in Hungary, he maintained relations with his family, with his friends, with his colleagues. He remained in living contact with Hungarian intellectual life, to the benefit of both parties.

Before discussing the documents of the case, let us briefly survey the personalities and the fundamental facts of the affair.

The personalities

First of all, the central figure, the accused: George von Hevesy[2]. His most important scientific achievement, the radioactive tracer method was attained in 1913, and he was awarded the Nobel prize for it in 1943. The tracer method is one of the major nuclear measuring techniques in common use up to the present day. It consists essentially of mixing together a chemical element with its own radioactive isotope and this way the place and route of this element can be followed by radiation measurement, even if the path leads deeply under the ground, in the interior of a hard metal or across some hidden part of the human body. The exceptional value of this technique is due to the great variety of applications, from agriculture to metallography, from geology to diverse industrial applications, from medical diagnostics to cancer research and biochemical research. In the latter field it was Hevesy himself who made the first steps of decisive importance. His achievements resulted in thousands of scientific papers by other authors; that is why one of his followers remarked that Hevesy was not only the father of isotope technique, but also the midwife helping to birth many scientific achievements. In addition, Hevesy largely contributed to the development of the concept of isotopes, applying the phenomenon at a moment when the concept was not yet clear and no name had been given to it.

The strikingly long period between the discovery and its award by the Nobel prize was not due to lack of appreciation by the scientific world (though such things have happened, too) or to petty jealousy, but to historical circumstances. In 1913 only a few radiating isotopes were known, those occurring in nature. A large number of radioactive isotopes suited for a wide

range of practical application only became available in the late 'thirties, after the Joliot-Curie couple had discovered artificial radioactivity.

Hevesy's other outstanding success, neutron activation analysis (1936) is based on artificial radioactivity. In activation analysis the radioactive isotope is produced in the non-active substance to be analyzed by neutron irradiation. Both discoveries resulted in methods that became widespread and fundamental; Hevesy was a leader in their application and in special research using them.

A further discovery was born in 1922, when Hevesy found a new element, hafnium, using spectroscopy. It is a notable feature of this discovery that it was based on theoretical considerations, on the atom model of Niels Bohr who was a close friend of Hevesy; it served as one of its experimental confirmations. This is demonstrated by its ceremonial announcement: Niels Bohr himself announced the discovery in his Nobel lecture in Stockholm.

The major stages of Hevesy's activities were Copenhagen, Freiburg, Stockholm, Vienna; however, he turned up and worked in almost all big cities of the world, mainly, of course, of Europe. He chose a strange way of living, permanently on travel, very unusual among scientists. However, up to World War II, he always considered Budapest one of the main stations of his travels.

He was born in Budapest on August 1, 1885, in a rich Jewish industrialist-landowner family. After secondary school in Budapest he studied one year at the University of Budapest, then continued his studies in Germany. He got to Manchester as assistant of Rutherford in 1911, into the paradise of atomic research, and there he began his work among the best representatives of this field of science, among the Nobel laureates of the time and of later times.

In the meanwhile he regularly came home to Budapest and performed experiments. He obtained his qualification as privat-dozent at the University of Budapest in 1913. During World War I he served in the army of the Austro-Hungarian Monarchy, and remained in Hungary after the end of the war.[3] This period of his life will be discussed in detail in this paper. From 1920 to 1926 he worked in Copenhagen as one of the founding members of Bohr's institute. From 1926 he was professor at the Freiburg University till Hitler's coming into power in 1933, when he returned to Copenhagen. In 1943 he had to flee again from Nazism; he moved to Sweden and continued to live there till his death in 1966. During his life he won all existing scientific distinctions, from the highest honours to the membership of the most distinguished societies. Obviously he was one of the greatest scientists of the 20th century, and—by far not incidentally—one of its most attractive personalities.

From the background of our story, as a passive and yet significant personage, another world-famous Hungarian emigrant scientist, similar in stature to Hevesy, emerges: Theodore von Kármán. Briefly, the pertaining facts: after the Hungarian revolution in 1918, during the reign of the bourgeois-

democratic Károlyi government, he was called to a high post in cultural policy, and remained in this position during the communist regime. Though by far no enthusiastic adherent of communism; he exerted an important, conclusively beneficial, well-intended influence on the technological and scientific measures of the Soviet Republic. At that time he was already an internationally known and recognized expert in hydrodynamics and aerodynamics. He was professor in Aachen and left it only temporarily because of the war. He was certainly not true politician and became mixed up with cultural policies in spite of himself. After the fall of the communist revolution he immediately returned to Germany, to his university department and left it only in the 'thirties, during Nazism. He moved to the United States and organized aeronautic research and teaching at the Caltech in Pasadena, which later became world-famous. He became a highly successful, school-creating scholar of aviation, of rocket technology and numerous related modern branches, a classic of supersonic aviation. During and after World War II he utilized his legendary sharp mind as general of the U.S.A. Air Forces and subsequently as a high official of the NATO. He had numerous high distinctions and titles including the honorary doctor's degree of the Technical University of Budapest, granted to him at his last visit to Hungary in 1962, one year before his death.

The witnesses for the prosecution were obviously not at the same level as Hevesy and Kármán. The persons in question, István Rybár and Dezső Pekár, were pillars of the so-called Loránd Eötvös-school, diligent polishers of the Eötvös pendulum.

Rybár, born in 1886, worked around 1910 with Izidor Fröhlich, professor of theoretical physics at the University of Budapest. From 1912 on he became assistant of the undisputedly greatest Hungarian scientist of the era, Loránd Eötvös and similarly to his colleagues at the department, busied himself for decades with nothing but perfecting the torsion pendulum—certainly not the top of originality in physical thinking. In 1922 he was appointed professor to the department of experimental physics, actually the department led earlier by Hevesy. From 1918 he was corresponding member of the Hungarian Academy of Sciences, and from 1931 its ordinary member; only, however, till 1949, when a reverse political change made him lose this position: he was not accepted among the members of the reorganized Academy. He died in 1971.

Dezső Pekár was born in 1973 and became assistant of Loránd Eötvös already in 1895. He participated in the world-famous experiment proving the proportionality of heavy and inert mass. Pekár's career as a geophysicist was presumably due to his practice in working with the torsion pendulum and to his connection with Eötvös. He became the first director of the Geophysical Institute in 1919, and led several geophysical expeditions abroad. His life, too, was spent under the magic spell of the pendulum. He became member of the Academy in 1922, and in 1949 he shared Rybár's fate. He lived till 1953.

Just a few words on the members of the political screening committee. Not all of them—as will be seen in the followings—behaved dishonourably; all of them, however, had a safe university position and commanding authority. Sándor Domanovszky, an outstanding researcher of Hungarian economic and agrarian History was one of the members; another was Antal Hekler (who later turned more and more openly into a Nazi sympathizer), a popular professor of art history, appointed in 1918, the introducer of the classic archeology method in Hungary. László Négyesi was known by his conservative aesthetic opinions; he first taught literature, subsequently aesthetics and was the author of many textbooks. Rezső Szegedi, also a literature historian, was distinguished in the philology of Slavic languages. Lajos Winkler was a slightly eccentric personality; he is, however, still considered one of the best scientists in classical chemical analysis.

The referee of the case János Tuzson was appointed professor to the department of botany in 1918; he left a rising career in forestry, partly under the influence of study tours in Western Europe, for the wider field of botany.

As to the chairman of the committee who led the whole procedure, so far I have only some conjectures. In the documents he is consequently termed chairman only, his name or his signature does not occur anywhere. It is possible that Dávid Angyal, professor of history, at the time the dean of the philosophical faculty presided; it was he who confirmed the minutes and signed the decision. It is, however, far from certain. What appears certain is that the chairman was the main responsible for the political manipulation instead of trying to protect the scientific interests of the university and to maintain its intellectual level. On top it all, and presumably not accidentally, the majority of the committee members were professors of humanities and not of natural sciences who could—at least on principle—have formed an idea on Hevesy's whole activity, on his true and moreover, on his potential role in Hungarian scientific life. Most committee members simply acted as brooms of political power, as its dutiful servants in the unruly world of science.

The case

The case dealt with George Hevesy's activities during the Hungarian Soviet Republic. The documents available in the archives allow to form a fairly objective picture of these activities.

The antecedents: Hevesy obtained the "venia legendi", the right to lecture at the University of Budapest in 1913. From then, he regularly worked at the university as lecturer (privatdozent) and experimenting researcher, with shorter or longer breaks. His laboratory was in the 3. Chemical Institute, headed by Professor Gusztáv Buchböck; this was the address he gave in his

publications and it was here that his few graduate studients worked.[5] In the meanwhile, however, he travelled very much, and experimented in numerous institutes all over Europe; he gave the impression that he was able to be simultaneously at various places. At that time one could not guess where he would finally settle, or he would settle at all. For instance, he did not accept a very honouring offer for a job in Berlin by Nernst himself, who was the greatest authority in physical chemistry at the time[6].

In scientific circles Hevesy's capacities must have been well known. Gusztáv Buchböck, a fine physico-chemist, Hevesy's chief and close friend, used his influence to keep him in Hungary. For this purpose, a new department should have been established: the department of physical chemistry, but many conditions to be satisfied were in the way of founding a new department. Anyway, in November 1918 the first steps were taken to appoint Hevesy to a professorship. On December 19 Buchböck presented the proposal to the faculty council; it was accepted with 29 against 5 votes and one abstention, and submitted to the Ministery on January 13, 1919[7].

All this happened after the bourgois-democratic revolution in October 1918, but still before the Hungarian Soviet Republic came into power (March 19, 1919). However, Hevesy received his appointment already from the communist government, on May 3, 1919, and was delegated that same week into the committee of the philosophical faculty (at the time the leading body of the faculty). Thus Hevesy became professor for the first time in his life, and immediately a leading citizen of the university[8].

Although he was appointed professor of physical chemistry, he worked—according to another document—from January 1, 1919 in the 2. Physical Institute as deputy head, in reality as head of the institute[9]. The explanation is that Jenő Klupathy, the head of the 2. Physical Institute fell seriously ill and no suitable successor could be found. Since the department of physical chemistry had not yet been established, Eötvös personally asked Hevesy to accept temporarily the direction of the institute and with it lecturing in experimental physics[10]. In a letter to Niels Bohr dated March 2, Hevesy wrote: "Few weeks ago I have been appointed for a year to the direktor of the physical laboratories, it means a lot of work. I have to lecture on experimental physics and so on." Moreover, Hevesy was so patient that he accepted this appointment again for the academic year 1919/20, that time at the request of Theodore von Kármán[11]. (Co-workers at the department were Pál Selényi, after 1949 member of the Hungarian Academy of science, and an outstanding great scientist, Michael Polányi. After the fall of the Hungarian Soviet Republic they were both dismissed from the university.)

The documents also evidence that Hevesy not only accepted the given situation, but took his task very seriously; he apparently saw good prospects in it. Otherwise he could not have been so active as manifested by the documents.

He participated at the sessions of the faculty committee and—according to the minutes—regularly contributed to the discussion, for instance in the matter of the institute of physical chemistry to be established and in various minor matters[12].

All this went on under the changing circumstances of the communist ruling. On April 8 Loránd Eötvös died. The Faculty Committee, on May 13, came forward with the proposal to invite, as successor of Eötvös, head of the 1. Physical Institute, the brilliant scientist Theodore von Kármán, at the time deputy head of department at the Commissariat of Public Education and in this function in charge of directing scientific and technological education and research. The Faculty Committee expressed its hope "that Kármán will consider it a great honour to take over the heritage of Eötvös, our greatest scientist"[13]. This heritage, however, was by far not free of problems. According to Hevesy's speech at the committee session of May 22, the 1. Physical Institute "was equipped by Eötvös only with instruments needed for his special investigations, and even these are the property of another institute (the Geophysical Institute)." According to the memorandum of the committee "we must state that the institute—after the transfer of the geophysical equipment—is in fact completely empty. Except the library, some primitive demonstration devices needed for the lectures and a few relics of value as museum pieces there is absolutely nothing of what is needed for a researching physicist." It was clear that modern equipping of this Physical Institute was of fundamental importance for the faculty[14].

Hevesy tackled this nerve-racking task with great energy. On may 22 he proposed to the faculty to ask for 50 thousand crowns to pay for equipment and materials confiscated elsewhere. On June 17 he again asked for a similar sum, because the money obtained earlier was gone and further confiscations made instruments and material available to equip the two Physical Institues and the Physico-Chemical Institute. On June 25 (in a memorandum sent directly to the Commissariat) he again asked for money, this time to install a mechanical workshop jointly servicing the physical, physico-chemical, psychological and astronomical institutes. All of Hevesy's requests were satisfied, usually signed by Kármán. No doubt, Hevesy was astonishingly active during the Soviet Republic, although he never was a communist, only interested in science and in the concerns of science[15].

It would have been fully incompatible with his personality to give up his connections abroad, his cosmopolitan way of living and above all his scientific activity outside Hungary. As soon as it became administratively possible, he set forth. On July 27 he announced in writing that he starts a six-week journey. From other sources we know that during this journey he also visited Niels Bohr in Denmark and that they agreed that Hevesy will continue his career in Bohr's institute scheduled to open the following year[16].

Two points should be considered in connection with this journey. One is the delicate date, July 27, preceding the fall of the Hungarian Soviet Republic (August 1) by a few days only. One might believe that Hevesy fled in the last minute from the sinking vessel. In fact, I could not find any documents proving beyond doubt that he intended to start his journay much earlier, acquitting him from the suspicion of flight. (It seems probable that such documents must have existed, but were lost.) The other point, however, irrefutably demonstrates the unfoundedness of this suspicion: the fact that Hevesy returned to Hungary and faced the consequences.

He could not, of course, guess that after the fall of the communist government, purge would be considered so urgent at the university. The new counter-revolutionary government, however, invalidated the appointments of the communist administration as early as September, and the decisions of the bourgois-democratic government were also confirmed only after thorough, by far not well-intentioned reconsideration, and only in certain cases. Hevesy presumably had a feeling that his case will not belong to these. Therefore, to anticipate the events, he resigned of his own accord. This is what he wrote in his letter of October 16, addressed to the dean: "It has come to my knowledge that various rumours are in circulation concerning my behaviour during the Soviet Republic. This circumstance induces me to be Your Honour to intervene that its examination should take place as soon as possible."[17] His request was granted: after a weak the procedures were started.

The procedures

The procedure in George von Hevesy's political screening testimonialization case began on October 21, 1919. Its course is best reflected by citing the complete minutes without any comments[18]:

Chairman: Were you a member of the Faculty Committee?
Hevesy: Yes. This Committee was an administrative body; I only spoke twice, once in connection with the porter's lodgings in the 2. Physical Institute and the second time after Eötvös's death, with the intent to ensure equipment as complete as possible for the Physical Institute, rather poorly equipped.
Chairman: Have you been appointed professor by the communist government?
Hevesy: Yes.
Chairman: To which department?
Hevesy: To the physico-chemical department. This appointment, in my opinion, was in the spirit of the Faculty, since it was the Faculty that submitted my appointment, and I considered it the legal consequence of this submission.
Chairman: In what relation were you with Kármán?

Hevesy: Our contact was purely scientific. I am an experimental physicist, Kármán is a theoretical physicist, we complement one another as the internist and the surgeon.
Tuzson, referee: Did not occur to you that Kármán assumed a highly exposed role?
Hevesy: I suggested to him that he should not personally get involved with things. However, for the university it was better that Kármán had the matters in hand if Fogarasi would have dealt with them. As far as I know, Kármán always made efforts to save the university as far as possible from mistreatment by the commissars.
Tuzson: What interference on your part has occurred into the matters of the 1. Physical Institute? What alterations did you plan and in what relation were these with Kármán's person?
Hevesy: In my opinion it was indispensable to improve the electrical equipment at the 1. Physical Institute. For this purpose, at the initiative of Kármán, I got into touch with Roggenbauer. When I noticed, however, that my activity offended Rybár, I withdrew.—Kármán asked me to procure anything available for the Physical Institute. This I did, and I believe that with this activity I rendered great services to the University. I knew that such types of instruments have been acquired that would later not be available for a long time.
Chairman: Has there been any embarrassing conflict between you and Rybár?
Hevesy: Pekár reproached me that I interfere with the affairs of the 1. Physical Institute. I was sorry that my activity had been misunderstood, and therefore went to Kármán and asked him to dispense me from the task.
Chairman: Did the subject of Rybár's dismissal turn up?
Hevesy: We spoke about it once. Kármán mentioned to me that the Commissariat wants to dismiss Rybár, but I most decidedly spoke up against this plan.
Chairman: You left Budapest just before the crisis of the communist regime?
Hevesy: There was no connection whatever between my leaving Budapest and the crisis. Already in April I applied for a passport, but did not get it. After many unsuccessful attempts, I finally received my passport in July and left Budapest. My journey was purely personal, I wished to continue the scientific research started earlier abroad.
Winkler, substitute member of the Committee: I consider it a matter of conscience to mention in favour of Hevesy that owing to his intervention the university was able to get back the high-value platinum quantity which was carried off.
Tuzson, referee: It is beyond doubt that Hevesy was one of the professors who served the interests of the communist regime with full zeal. It is obvious that he

prepared the 1. Physical Institute for Kármán. There is no sign that he kept any distance from Kármán.
Domanovszky, substitute member: I have the impression that no great matters have been done by Hevesy. It appears that he always attempted to assert the interests of the university and of science.
Szegedy, committee member: Doubtlessly Hevesy did not care about the autonomy of the university and lent himself as a means in the service of the interests of the Soviet Republic.
Tuzson, referee: What is of most serious importance is Hevesy's aggressive interference with the matters of the 1. Physical Institute, supported by his intimacy with Kármán.
Négyesy, substitute member: The weakness of Hevesy's political judgment is demonstrated by the fact that he believed in the survival of the system and devoted himself to this political current. He became obsessed with the organization of the institute. None the less, he is scientifically a useful person and one may hope that since his main defect is weakness, he will, in the future, perform useful work.
Hekler, member: Since the interrogation did not fully clear the role of Hevesy, he suggests that before making a decision the committee should question Rybár on the matter.

The committee accepts the proposal and postpones the decision in the Hevesy case to the next session."

The second round followed. The Committee gathered again on October 27, 1919, with the interrogation of István Rybár and Dezső Pekár on its agenda. Let us again cite the minutes[19]:

"*Chairman:* What can you report about Hevesy's role concerning the 1. Physical Institute?
Rybár: The matter begins with Eötvös's death. I went to Fröhlich and announced the decease. Fröhlich went to the dean and asked him to charge me with the leadership of the institute; this—in conformity with Eötvös'—intention—was done. Shortly after, Kármán appeared in the institute with Hugo Böck (an excellent geologist, member of the Academy—G. P.) and viewed the premises. The aim was to separate the geophysical institute from the physical institute. In May Kármán again appeared in the Institute in the company of counsellor Mészáros and engineer Roggenbauer. They then discussed certain transformation plans, for which they envisaged a sum of 1,200,000 crowns. On the following day received a letter from Hevesy informing me that Kármán charged him with the leadership of the institute, and simultaneously asked for the plans of the reconstruction of the building. I gave them to him. I was also requested to speak with Eötvös's daughters who lived in

the building and notify them that their apartment will be viewed. This inspection was held, with the explanation that a physico-chemical institute is planned to be established, and they wanted to find place for it. After some days Hevesy appeared in the institute with Somogyi and Iván Tomics (both lecturers at the Faculty—G. P.) and discussed the laying of some cables. One day, when I came in, I saw to my greatest astonishment that the workshop table had been forced open and modifications were under way upon Hevesy's order. I then thought of more forceful intervention, but after my students warned me of the impending dangerous consequences, I abstained from this idea. Meanwhile, Hevesy appeared in the institute in the company of Tar Kálmán and gave instructions how to lay the cables. When I asked him why he interferes with the matters of the institute in my charge, he flew at me in a sharp, commanding voice: control yourself! In the mean time many instruments arrived into the institute to complete the equipment; they had been confiscated by Hevesy at the Calderoni Comp. After the fall of the dictature of the proletariat Murányi, the manager of Calderoni came to see me declaring that he was forced to hand over the instruments under the effect of terror, but that he was unwilling to yield them for the devaluated money. We agreed that he would inform me before accepting the sum. Some days ago, however, I was informed in a letter by the Calderoni Comp. that the finance department has paid the bill.

Négyessy, member: According your information, was Hevesy in purely scientific connection with Kármán, or was he authorized by Kármán to take measures?

Rybár: Hevesy was in closest connection with Kármán also in taking measures.

Winkler, member: Has it come to your notice that the Commissariat wanted to dismiss you from your position owing to your being a member of Szt. István Academy, and that it was Hevesy who prevented it?

Rybár: I do not know, I only heard that according to the statement of Kármán I owe it to Hevesy that I could remain in my post.—After the dictature of the proletariat came into power, I heard from the servant Iván Hajdu that the authorities want to remove me and that he also knows when.

Domanovszky, member: What is your opinion about the equipment bought by Hevesy? How far was this purchase advantageous?

Rybár: It is true that the 1. Physical Institute was perfectly equipped only from the point of view of gravitation and magnetism of the earth. In other fields the equipment was very deficient. I deny that Hevesy had been of any help regarding this state. The equipment he bought gives the impression that it is intended for a physico-chemical institute. Also, it includes products manufactured during the war, for instance rheostats which I even dare not use.

Hekler, member: Who signed the mentioned bills? Without endorsement the financial department could not have paid them!

Rybár: I signed a bill amounting to 22,000 crowns, since Hevesy told me that it is my duty to sign it, because I am the leader of the institute. Concerning the other bills, I do not know who signed them.
Winkler, member: It is true that Hevesy offered you an apology?
Rybár: It is not true."

Subsequently Dezső Pekár was interrogated.

"*Chairman:* What impression did you have concerning Hevesy's behaviour towards Kármán?
Pekár: Hevesy constantly interfered with the matters of the 1. Physical Institute. He ordered various transformations without asking Rybár's opinion. He also was not interested in my opinion. The transformations were rather unlucky. Also, Hevesy purchased a lot of instruments for the institute that sooner suited for chemical purposes and included many products manufactured during the war. When Hevesy came into the institute, he was always accompanied by Sándor Rex (chemist, lecturer at the Faculty, member of the Faculty Committee—G. P.) who did not belong to the institute. Rex was the expert, and Rybár's opinion was never asked. The importance of the Geophysical Institute has never been taken into consideration, sooner or later they wanted to get rid of us.—Hevesy was a close friend and man of confidence of Kármán.—Hevesy was a member of the Science Union (an organization established during the communist era—G. P.); this I consider degrading in itself, since that union consisted mainly of anti-nationalistic and left-wing elements."

The sentence

After these interrogations the committee presumably withdrew. I believe, on the basis of the questions and remarks, that a debate went on, and probably the sentence itself was not unanimous. (Unfortunately no evidences, even indirect one could be found.) The decision, confirmed by the dean of the faculty, Dávid Angyal, referred to Paragraph 29 of the privatdozent regulation and dwelled on the greatly elastic passage according to which "the person in whose personal conditions such changes have taken place that are incompatible with the privatdozent status or with the dignity and scientific-moral interests of the university loses his privatdozent licence".

Therefore, the question can be formulated in the following manner: did the "committee delegated to examine the injuries to the autonomy of the university" detect facts in George Hevesy's activity conflicting with the august interests of the university, with its strictly guarded and, of course, impartially contemplated authority? We know the answer: yes, the committee detected such facts, not only a single one, but three, all of them capital offences: (1)

Hevesy was appointed professor by the Commissariat for Public Education; (2) he was member of the Faculty Committee; (3) he was in close contact with Kármán and with his help interfered with the matters of the 1. Physical Institute, "inconsiderately pushing aside its legally appointed leader", and attempted to "equip the institute with great investments" for Kármán. His judges qualified these charges as obvious violations of the above-cited Paragraph 29, and thus they had to decide what punishment to propose. Their decision was clear-cut, short and a disgrace to the university: Hevesy shall be deprived of the *venia legendi*, of the right to lecture[20].

Before, however, the sentense came into force, it had to pass through the stages of sanctioning, and during that process, tragicomically, it was increased more and more, so that finally it became quite ridiculous. In the first stage, at the November 6 session of the Faculty, the committee decision was still passed without any changes (not unanimously, but in a proportion of 24:8), and consequently the dean forwarded the case in this form. At the next stage, at the University Council session of April 12, 1920, the matter turned more serious. The referee of the case József Lukcsics, vice-dean of the Theological Faculty agreed word for word with the viewpoint of the Philosophical Faculty regarding both the charges and the sentence; none the less, a debate was started regarding the latter. In this debate, Sándor Király, vice-dean of the Faculty of Law, sharply rejected the proposed sentence with the words: "We are dealing with a more serious case". He demanded that disciplinary action be taken against Hevesy; the material gathered by considered as the documents of a preliminary investigation one, and a disciplinary resolution be brought. Alfréd Doleschall, dean of the Faculty of Law, and a sufficient number of other council members supported Király's proposal, and the body immediately changed into the "Council of the Budapest University as Disciplinary Court" and "passed sentence as the result of the definitive disciplinary procedure", in the absence, of course, of the accused. Accordingly, the Disciplinary Court "states that George Hevesy has committed the disciplinary offense, declares him guilty in this and therefore deprives him by sentence of the *venia legendi*".

What is most surprising, however, is not the judgment itself, but the motivation. The latter refers, on the one hand, to the charges cited above, and on the other hand adds further charges, namely that Hevesy, in addition to lecturing at the university, (a) held lectures in the Research Institute of Historic Materialism; (b) was head of the secondary school section at the Commissariat; (c) participated in examinations for the doctorate; (d) "in the interest of protecting the Communist System he accepted an assignment and behaved threateningly"[21].

This was not only ridiculous, but also very awkward. It was unacceptable for the Faculty to have its decision increased on the basis of fully absurd motivations, if it wants to save its face. Dean David Angyal immediately, on

May 17, 1920, "took the liberty to calling the attention" of the rector to the fact that the charges (a), (b) and (c) are incorrect and remind ominously of the charges in another case, that of József Révay, professor of literature. The correctness of the objection was obvious. The problem was solved in a simple manner: the charges in question were qualified "accidental clerical errors" and erased from the authentic document. One might expect that if part of the charges were found to be untrue, the sentence would be mitigated. This, however, was not brought up, the erroneous charges were erased "keeping the original sentence and motivation intact"[22].

This was practically the last word in Hevesy's case. The modification was issued as early as May 19; it was followed by a few letters addressed to those who were officially notified earlier about the case; in the autumn of 1920 some financial arrangements of little interest, connected with Hevesy, were made, and then the whole affair died off. Hevesy's name came up again only in July 1921, in a letter addressed to Béla Pogány (later professor of physics at the Technical University of Budapest), inquiring the address of "Professor Hevesy", for some account matters. Thus, he did remain "professor" in the view of some people . . .[23].

Whether the judgment rested solely upon the charges of the Philosophical Faculty and only a clerical error happened cannot be known for certain. Let us assume that this was the case. It does not change our judgement, just as the modification of the charge did not change theirs. One thing is certain: the witch hunt that drove George von Hevesy away once for all from the university of Budapest was terminated for good.

Why did George von Hevesy leave Hungary?

In the knowledge of the repugnant story, the answer to this question appears evident. However, the judgement did not expel Hevesy from Hungary, but only from the University of Budapest, and Hevesy himself did not consider it otherwise. His situation was not similar to Kármán's, who after the fall of the Hungarian Soviet Republic, was forced to hide and returned to his university department in Aachen under adventurous circumstances, full of bitter thoughts about Hungary, about the chances in this country; and with notions and experiences presumably not very different from Hevesy's he headed straight towards the world fame as a scientist[24].

Hevesy, in contrast, did not flee at all, but instead came home. We met him last at his trial on October 21 1919. However, he remained in Hungary for many months still, he left for Copenhagen only in the spring of 1920. And what else could he have done till his departure, he worked, experimented in Hungary and prepared himself for his new life only by the way.

He was expelled from the University of Budapest, but found a laboratory elsewhere: at the Veterinary College, where a close friend of his, Gyula Gróh was head of the department of chemistry, with whom he had continued experiments jointly for several months earlier. Thus, Hevesy took no notice of the sentence that actually discredited the university itself, not him. He did not stop with the research work started earlier, moreover, he published its very significant results together with Hungarian co-workers. Nothing hindered him in writing a monograph-like chapter for a German handbook[25]. He regularly went to the laboratory, read a lot and sat in his apartment at his desk, writing—luckily for us—not only scientific papers, but also letters, which have partly survived and help us to understand the responses that the events brought about in him.

Above all, a fundamental question must be cleared up: was Hevesy a communist or was he not. Had he been one, we should realistically state that he logically became a victim of "tidying up" after the political cataclysm, since autonomy of the university in Hungary never was anything but an illusion, a slogan without any background. Actually, political power always asserted its will, by sterner or milder means it always defamed and defeated its opponents. Yet, Hevesy shrank not only from communism, but from any active participation in politics. This is what he wrote to Bohr concerning his political opinions: "I have no strong party feelings and I am either a radical nor a conservative. I am fully aware of the weaknesses of both parties." His lines dated April 1919 are even more meaningful: "We leave now most interesting times of making history, though they are not favourable to scientific research, which needs quietness and a steady atmosphere. I am personally not detained from those occurrences in my work, my love for scientific research being much stronger than political interest "in politics."[26]

The quotation convinces us of two important facts. One of these is that the witch hunters, in this case, did not send a true political adversary to the symbolical stake, but one of the greatest scientists of the faculty who politically, moreover, was not a left-wing radical, but only an honest liberal.

If we accept this, the question immediately arises: what could have been hidden behind the affair? The personal ambition of István Rybár for the post of head of department is perhaps not a sufficient explanation, but cannot be left out of consideration. This ambition gained ground under the changed political conditions, when denunciation became an important factor in paving the road of careers. How important personal interweaving was in the affair is demonstrated clearly by the document appointing Izidor Fröhlich, a theoretical physicist absurdly conservative even in his scientific views deputy head of the 2. Physical Institute, (Hevesy's post), dated October 15 1919. The date is of importance, since Hevesy's resignation letter was dated October 16, and the procedure in his case started on October 21. Thus it is evident that the

future of the department had been decided in advance. The trial was actually only for display. However, it belongs to the truth that although the personal factors could presumably play an important role, Hevesy, even if basically not prompted by political motives, objectively did, in fact, serve the interests of the communist leadership, the three charges stated in the proceedings were undeniably true. It is another question that they were interpreted wrongly. (It is perhaps sufficient to emphasize that Kármán himself was never a communist either.) What was behind the affair was presumably a complex mixture of political and personal aspects, but certainly not the protection of the university's authority.

To return to the letter of April, the other element of importance is that Hevesy did not consider his research conditions during the revolution unsuitable ("... I am personally not detained in my work"). Therefore, when analyzing the reasons of his leaving Hungary, we cannot accept simplifying explanations like that of his British physicist colleague Cockroft, also a Nobel-prize laureate, according to whom "during the time of the second revolution" (that is, during the reign of the Soviet Republic) working conditions for Hevesy deteriorated to such an extent that research became impossible for him[28]. Probably the contrary is true: it was just during this period that a promising prospect in the form of an independent physico-chemical department began to take shape; its equipment and its location successively started to develop, and it could have been tailored actually to Hevesy's requirements.

In an embittered letter to Bohr, dated October 25 1919, he analyzed the reasons for his departure: "Politics entered also the University, in my absence this summer two of my assistants absolutely honest and able have been deprived from their posts only because they are jews and I understand that the same thing happened in nearly all Institutes, hardly anybody who is a jew or a radical or is suspected to be a radical could retain his post.—Under these circumstances I could not act differently as resign my post. Though I have not been attacked personally I am bound to be attacked for I was on good terms with Kármán, was in favour of he being appointed the successor of the late Baron Eötvös on the chair of physics and tryed to fit up the physical laboratories, which remained in poor state after Baron Eötvös, for I forsaw the material ruin of the country which was bound to ensue. Kármán was the chief of the University department of the Bolshevik rule and for this reason ably hated of those ruling the Budapest University. Though he far from being a bolshevik took up and sticked at his post only to prevent so far as possible the bolshevik government to wrack the University.—I was in charge of the II. d. Physical Laboratories as a temporary director, for the owner of this professorship as though very ill still at life. If was this post a resigned.—The University is closed and won't be opened before next spring, the prevalent moral and material decay will I fear for long time prevent any kind of

successfull scientific life in Hungary.—I am now a free man and I am so glad to be able to work in your laboratory."[29]

Hevesy described the events in a very similar conception to Rutherford, only much shorter, more concisely and less dramatically. ". . . political feelings are running extremely high and University affairs have been mixed with politics in a way fully unknown to Western countries. All those have induced me to resign my professorship to which I have recently been appointed and to come to Copenhagen to work with Bohr, what I always wished to do."[30] It is a characteristic feature of both letters that he does not mention the witch hunt. . .

So, why did Hevesy leave Hungary? For all of the mentioned reasons. For his being calumniated, removed from his position, for being deprived of his right to lecture as privatdozent; because the country, as he foresaw it, came into a state of political, economical and moral decay; because he hated the white terror regime; because he was afraid of anti-Semitism. On top of it, on the other side a secure country awaited him, an institute with scientific life on a much higher level, a clear scientific atmosphere, and above all he was expected by his highly esteemed and loved friend Niels Bohr.

His decision was not hampered by the notion that he must break off the relations with his homeland, simply because he never broke them off. He could come home whenever he liked, and he did, in fact, come frequently, He could retain his identity and his close relations with everything and everybody whom he considered important; he even held lectures, only never did any research work and of course never accepted a post. All this, however, belongs to the period of his life after 1920.

Thus Hevesy had nothing to ponder. In the spring of 1920 he completed his work in Hungary, took a train in early March and departed for his new working place which soon became one of the most outstanding centres of modern science[31].

Notes

1. Concerning the persecution of scientists after the fall of the Hungarian Soviet Republic, startling facts were reported by B. Bellér: Scientists in the storm of the counter-revolution (in Hungarian). Valóság, No. 2, 1960.
2. No biographical monograph on Hevesy has yet appeared in Hungary, but a number of shorter biographies, such as e.g. F. Szabadváry: Hevesy. György Term. Tud. Közl. 1965, 337; Z. Zsebők: Hevesy György (1885–1966). Orvosi Hetilap, 1966, 1825; R. Kunfalvy: George Hevesy. Fiz. Szemle, 1981, 137 (all in Hungarian). F. Szabadváry: George Hevesy (1885–1966) J. of Radioanal. Chem. 1 97–108. (1968) F. Szabadváry: Hevesy, György, Dictionary of Scientific Biographies, Loibner, New York, Vol. 6. 365–366.
3. Hevesy's scientific activities in Hungary are discussed in detail in another of my papers, cf. G. Palló: Hevesy in Hungary (in Hungarian). Fiz. Szemle, April 1985.

4. The brief reports on Hevesy's opponents are based mainly on: Hungarian Biographic Encyclopedia (in Hungarian). Ed. Á. Kenyeres, Akadémiai Kiadó, Budapest, 1967.
5. Concerning details cf. my paper cited in Note 3.
6. We can form a picture about his travels mainly by his letters. Hevesy's presumably very extended correspondence has not yet been processed (moreover, it has not been collected either). However, some parts are at disposal. When I quote a letter, it is mainly from Bohr's Scientific Correspondence (in the followings: BSC) and from the correspondence between Hevesy and Rutherford, in: Archives for History of Quantum Physics (in the followings: AHQP), University of California, Berkeley, U.S.A. Nernst's proposal cf. Hevesy's letter to Bohr, 21 July 1914 (AHQP, BSC).
7. The greatest part of Hungarian documents is found in the archives of the Eötvös Loránd University of Budapest (in the followings: ELTE Arch.) and similarly to the documents abroad is as yet unpublished and not used, at least not from the view of Hevesy's life. The documentary material gathered may be considered complete; in its collection the head of the archives dr. László Szögi was of great help, and I wish to thank him here for his assistance. The individual stages of Hevesy's advancement: ELTE Minutes of the Philosophical Faculty Council Sessions Lt. BTK OH, 2nd and 3rd session of the. academical year 1918–1919, 28 November 1918 and 19 December 1918, and ELTE 902/1918–19, 13 January 1919.
8. Hevesy's appointment to professorship and his delegation to the Philosophical Faculty Committee is found in the Hungarian National Archives (in the followings: MOL). Regarding Hevesy, the documents in the MOL are very scanty. I am indebted to thanks to É. M. Román for her valuable assistance in their collection.—Appointment to professorhip: MOL, K—636 1919—5—88226, Budapest 3 May 1919.—Membership of the Philosophical Faculty Committee: MOL K—636 1919—5—89042. Budapest, 7 May 1919.
9. Cf. MOL K—636 1919—4—89855, Budapest, 9 May 1919, and MOL K—636 1919—4—77224, Budapest, 10 April 1919.
10. This is how the story is described by the author of the best Hevesy-biography, himself a former co-worker of Hevesy, Nobel-laureate physicist J. D. Cockroft (Biographical Memoirs of Fellows of the Royal Society, 1967, p. 125–166). Hevesy writes about it similarly to Bohr in a letter quoted later.
11. Hevesy's letter to Bohr, 2 March 1919 (AHQP, BSC). Presentation: ELTE Lt. BTK OH 1794 1918–19, Budapest, 17 June 1919. Appointment: ELTE Lt. BTK OH 1921/1918–19, Budapest, 1 July 1919.
12. The minutes are kept in ELTE Arch. Philosophical Faculty Committee Minutes, 1918–19.
13. The documents of the invitation, together with the minutes of the session of the Faculty Committee: MOL K—636 1919—5—92192.
14. ELTE Lt. BTK. 1670/1919—D, Budapest, 22 May 1919 and HNA K—636 1919—4—154219.
15. Concerning his request of 22 May cf. the previous note.—MOL K—636 1919—4—153718, Budapest, 17 June 1919.—MOL K—636 1919—4—154696. (The requests and their granting are registered under the same number.)
16. The start of the study tour: ELTE Lt. BTK OH 1983/1918–19 Budapest 27 July 1919.—Regarding his agreement with Bohr cf. Cockroft op. cit. p. 133, but it is also fully evident from Hevesy's and Bohr's correspondence, in which something is always mentioned after Hevesy's summer journey about the organization of Hevesy's activity in Copenhague.
17. Cf. ELTE BTK OH 184/1919–20, Budapest, 16 October 1919.
18. The minutes are found in ELTE Arch. Rector's Office ad 1078/1919–20, Budapest, 21 October 1919.

19. Cf. ELTE Arch. Rector's Office ad 1078/1919–20, Budapest 27 October 1919.
20. Both the reference to Paragraph 29 and the charges and judgment are from the document annexed to the minutes, bearing the title "Extract from the four reports of the committee delegated to investigate the violation of the University's autonomy"
21. The cited documents: ELTE Arch. Rector's Office ad 1078/1919–20, Budapest, 6 November 1919 (Minutes of the extraordinary session of the Philosophical Faculty). Lukasics's proposal to the University Council: ELTE Arch. Rector's Office ad 1078/1919–20, Budapest, 7 January 1920. The minutes of the 12 April session and separately the judgment is also found under the above number with the date 12 April 1920.
22. The dean's letter: ELTE Lt. BTK OH 1002/1919–20, Budapest, 17 May 1920.—The classical philologue Révay, did not fail to write ironically and disdainfully about the witch hunt directed against him and about his judges, who for the most part were identical with Hevesy's judges, cf. József Révay: Vivat Academia (in Hungarian). Független Szemle, 1922. p. 148–149.—The correction issued by the rector: ELTE Arch. Rector's Office ad 1078/1919–20, Budapest, 19 May 1920.
23. The mentioned letters are partly annexed to the last document of the previous note, and partly the followings: ELTE Lt. BTK OH 1051/1920–21, Budapest, 22 September 1920; ELTE Lt. BTK OH 2260/1920–21, Budapest, 4 July 1921.
24. Cf. G. Palló: A syndrome of history of science, based on Theodore von Kármán's career (in Hungarian). Valóság, 1982 No. 6, 20–38.
25. Hevesy's research at the Veterinary College is discussed and a list of the publications is given in my paper cited in Note 3. The monograph was written at the request of the well-known physicochemist Graetz, it appeared in Vol. II of Handbuch der Elektrozität und Magnetismus in fünf Bänden, Herausg. L. Graetz, Verl. J. A. Barth, 1921. The chapters written by Hevesy are: Elektrolyse und elektrolytische Polarisation, p. 173–672, and Die Akkumulatoren, p. 673–766. Hevesy regularly reported to Bohr on his work in his letters. These publications have not been recorded up to the present by Hevesy's biographers, nor in bibliographies.
26. Hevesy's letters to Bohr from 25 October 1919 and 19 April 1919 (AHQP, BSC).
27. The institution led by Fröhlich was called "Collection of Educational Appliances for Theoretical Physics" and replaced a true department for theoretical physics. ELTE Lt. BTK OH ad 184/1919–20, Budapest, 27 October 1919. (The decision cited in the letter is dated 15 October 1919.)
28. Cf. Cockroft, op. cit. p. 133
29. Hevesy's letter to Bohr, 25 October 1919 (AHQP, BSC)
30. Hevesy's letter to Rutherford, Copenhagen, 20 May 1920. (AHQP)
31. The exact date of Hevesy's departure is unknown. It is certain that he stayed for some time in Vienna; from that city he wrote to Bohr on March 12 that he had arrived a few days previously. Cf. Hevesy's letter to Bohr, 12 March 1920 (AHQP, BSC).

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