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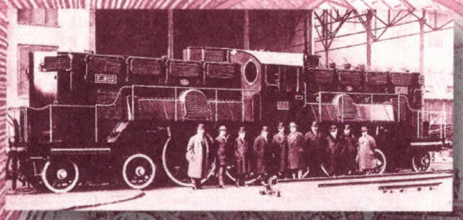

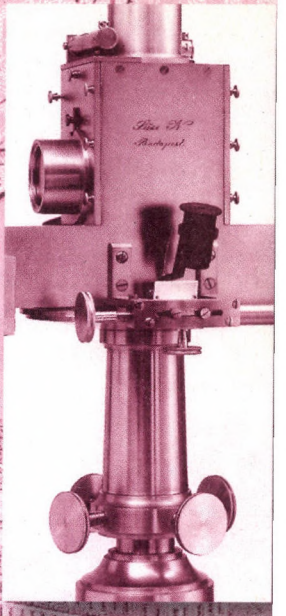

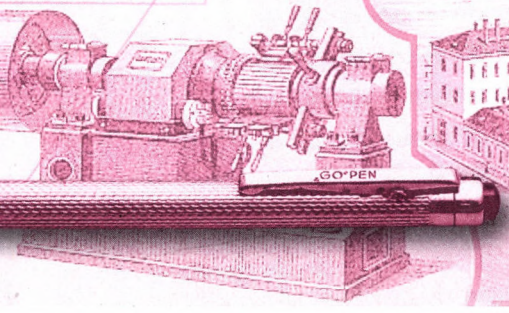

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István Gazda

Creative Minds

This country's contribution to the natural sciences has been considerable. János Bolyai was one of the greatest of mathematicians; computer science would not be what it is now without John von Neumann; the present value of the metre was determined by Zoltán Bay. Leó Szilárd, Ede Teller and their contemporaries made great contributions to atomic physics; György Oláh is honoured in chemistry as the developer of synthetic petrol—and the list could be greatly extended. An American scientific journal recently claimed that the science of the 20th century was masterminded in Budapest. Flattering as the comment is, it should be added that the achievements were based on an educational system which provided sound foundations and a significant nurturing of talent.

Competitions in mathematics and physics were first introduced in Hungary (Dániel Arany and Loránd Eötvös), together with puzzles fostering problem solving techniques (György Pólya). Dániel Arany launched a mathematical monthly for secondary schools, *Középiskolai Matematikai Lapok,* in 1894, one of the first publications of its kind in the world. The journal still exists, and provided the idea for the compilation of the *Hungarian Problem Books,* of worldwide reputation.

Many things may have been conceived here in this country, but a good number were accomplished elsewhere (the atomic pile, electronic computers, etc.).

Arithmeticians

The first book written by a Hungarian mathematician appeared in the Netherlands in 1499. Little is known about the life of its author, György mester (Master George), except that he lived from 1422 to 1502, was probably a

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István Gazda

is Director of the Institute for the History of Hungarian Sciences and the author of more than 70 books on the history of science. He was responsible for putting together a major popular science television series of 500 hours on Hungarian State Television and is Chief Consultant to the Millennium Exhibitions and Events Centre opening this year.

priest in Utrecht, and also worked there as an arithmetician. His booklet on arithmetic appeared in Utrecht, half a century after printing was invented.

The first book of arithmetic in Hungarian was published in 1577 in Debrecen, under the title *Debreceni aritmetika,* with the words in the subtitle, "translated from the reckonings of the learned Gemma Frisius". The volume only appears to be a Hungarian version of the Flemish mathematician's work, which appeared in Antwerp in 1536; it has, however, nothing to do with it. It was a practical course book in arithmetic tailored to the needs of the time; the reference to the Flemish author was to enhance its authority, and hence its market value. The real source seems to have been a Polish work.

The 18th century saw Hungarian mathematicians gain international renown: János András Segner, formerly working in Debrecen, provided, while teaching at German universities, a viable method to approximate the value of π, and a proof for a Descartes theorem. His textbooks were used by thousands of students at foreign universities. György Maróthi's Hungarian arithmetic and István Hatvani's natural philosophy, the latter an early gem in probability calculus, were important works by any standard.

The mathematical textbooks of the astronomer Miksa Hell or the physicist Pál Makó could have been used in any school in Europe. The novelist András Dugonics was also a renowned secondary-school teacher in the latter third of the 18th century, who contributed many scientific terms to modern Hungarian.

In the 18th century more and more talents found their way to foreign universities, to continue their studies under distinguished professors. Those of a poorer background could go abroad as the tutors, companions or friends of the children of the aristocracy. This was how Farkas Bolyai got to Göttingen, where Gauss, then a student, who was to be revered in a few years' time as the prince of mathematics, became his friend.

On his return Farkas Bolyai started teaching mathematics and physics at the Calvinist College at Marosvásárhely (Tûrgu Mureş). Through the years he grew to be one of the luminaries in Hungarian mathematics, and the author of outstanding academic works and textbooks. In these he published his method for providing approximate solutions for certain algebraic equations, and set up a theorem on the possibility to slice two polygons of the same area into smaller polygons which can be arranged into congruent pairs. The question kept intriguing mathematicians for some time. Farkas Bolyai was a great mathematician, an outstanding teacher and a renowned inventor, who did not mind having had only one publication in the journal of the Hungarian Academy—and that was on wedding ceremonies in the Marosszék region in Transylvania. Nor did he mind his contemporaries taking more account of his plays than his mathematical findings.

His son, János Bolyai, partly followed in his father's tracks and gained, alas, similarly little acknowledgement in his lifetime, especially for his work on parallels. By 1823 he had tackled the problem, and formulated his findings under the

title, *The Absolutely True Science of Space.* The 26-page essay came to be published in 1832 as an appendix to his father's two-volume textbook. In it János Bolyai pointed out that rejecting Euclid's fifth axiom concerning parallel lines could be the starting point for a different but wholly consistent—non-Euclidian—geometry, in which all the other axioms operate. Leaving aside the fifth axiom produces a so-called absolute geometry which includes the common elements of both geometries. One of the greatest insights of mathematics, it later became vital for Einstein's general theory of relativity.

In other papers János Bolyai clarified the geometrical role of complex numbers, wrote on musical theory, questions of philosophy and linguistics and, as a graduate of the Technische Hochschule in Vienna, he also dealt with issues of military science. He was not a well man and retired early to a farm in a small village, while continuing to be intrigued by universal problems. Portions of the vast collection of his manuscripts will become available to the public on the occasion of the coming bicentenary of his birth.

Gyula Farkas, working not far from the Bolyais' town, in Kolozsvár (Cluj)—where a university was founded in 1872—developed a method for linear programming, though his findings became useful only decades later. His contemporary, Gyula Vályi, became an expert in partial differential equations. Promising talents around 1900 were Zoárd Geöcze—who died at the age of 43 of an illness contracted during the First World War—and Győző Zemplén (who also died young in the battle line): the former was the founder of the modern theory of surface area calculation, while the latter was one of the greatest figures in modern physics at the time.

The 20th century was the golden age of mathematics in Hungary. Frigyes Riesz, founder of a school of mathematics associated with the University of Szeged, is honoured among mathematicians as the inventor of functional analysis, the method that unites analysis and geometry. The course and specialist books by his colleague, Béla Szőkefalvi-Nagy, student of analytic equations, are still widely quoted.

The studies of Lipót Fejér have also remained constant points of reference; his contribution to the theory of interpolation, especially the summability of Fourier series, was of great importance. Points of reference, that is, for those who are not baffled by such series: modern mathematics has for long been a field for the initiates. Fejér was one of them.

He was a chevalier of the French Legion of Honour, a member of the scientific societies of Göttingen and Calcutta, of the Bavarian and the Polish Academies, and despite his Jewish origin, even the Hungarian Academy of Sciences made him a member in 1908 (a gesture that was denied, a few years later, to John von Neumann.)

The organizers of the Chicago World Fair of 1933/34 invited and funded the visit of the four most famous European scientists. One of them was Lipót

Fejér. Known as Uncle Lipi, a friend of the great poet Endre Ady, a teacher of the novelist Géza Ottlik and others, he founded a school of mathematics. His ideas are still relevant in the solution of new mathematical problems.

His contemporary, Alfréd Haar of Szeged was the developer of the system named after him; his theorem that a basic quality of the trigonometric orthogonal system is that the measure of an arc is invariant to the notation of the circle is considered one of his greatest findings.

Pál Dienes, an expert in power series, lived in England, and György Pólya, a student of complex analysis, probability calculus and the theory of inequality, made a name for himself in the United States. The latter's book in mathematical analysis, co-authored with Gábor Szegő, has become a bible in the profession. His witty, heuristic writings—also available in Hungarian—have helped many to understand the subtleties of rationalistic thinking. Marcell Riesz lived in Sweden; as well as being the other major Hungarian name in function theory, he also excelled in trigonometric series and other "delicacies".

The 20th century, was a century of mathematics, and a century of Hungarian mathematicians. Mihály Fekete started his career as a substitute teacher at a Budapest secondary school, to land in 1928 at the University of Jerusalem as professor of mathematics; he taught there for forty years.

One of Fejér's doctoral students was probably the most original of Hungarian mathematicians, John von Neumann. He went to Princeton, where he made outstanding contributions to almost all branches of mathematics, from function analysis through quantum mechanics, continuous geometry, modern computer science, the modelling of the brain, to game theory. Computers used today are still of the Neumann-type, utilizing in their structure the principles he had laid down.

If many great teachers left the country, there were quite a few who remained. László Kalmár was a specialist in mathematical logic; Rózsa Péter was an authority in recursive functions. Pál Turán can be considered the founder of a school in analysis, number theory and graph theory; György Hajós achieved international recognition through his textbooks and a proof for the Minkowski theorem. Alfréd Rényi is a great name in combinatorial analysis and number theory; his papers providing a new axiomatic foundation for probability calculus are among the finest achievements in the century.

Above all, they were all humanist thinkers, great individuals striving for a better life and to educate others. As Rényi, they all carried on a certain dialogue with mathematics, mathematicians and sober thinkers of the world. They made an immense contribution to how Hungary was judged, like so many ambassadors, the most famous among them in this respect was probably the late Pál Erdős, the wandering scholar, who collaborated with hundreds of mathematicians around the world, on a variety of problems.

After 1467 all seven of the liberal arts, astronomy included, were taught at the Pozsony (Bratislava) Academia Istropolitana, founded by the Archbishop of Esztergom, János Vitéz. This was the time when Peuerbach's disciple, Regiomontanus lived in Hungary, just as did Bylica, Tolhopff and Dorn, the instrument maker.

Regiomontanus was born Johann Müller, and adopted his pseudonym after Mons Regis, the Latin name of Königsberg (Kaliningrad). In 1467 he prepared for Vitéz *Tabulæ directionum,* which became a standard work not so much for astrologists as astronomers and navigators. The handwritten work was copied into a codex and kept in Vitéz's library, whence it was transferred into the famous collection of King Matthias, the Corvina library.

It was in the court of Matthias, in 1468, that he created the first *Sine Table,* later printed; its authority was such that when in 1694 (no less than two centuries later) two Jesuits, János Dubovszky and Ferenc Székely, published a similar table in Nagyszombat (Trnava), their main source was Regiomontanus's work.

He soon completed a work in spherical trigonometry, *Tabulæ magnae primi mobilis,* which he dedicated to Matthias, who first had it copied as a *Corvina* (one of his famous collection of codices) and had it printed in 1475. Among the *Corvinæ* there is a copy of his translation of *Almages,* Ptolemy's major work, which he might have presented to János Vitéz at the inauguration of the Pozsony university, and which later appeared in the collection of Queen Beatrice.

Regiomontanus lived in Hungary, more or less continuously, between 1467 and 1471. He then went to live and work in Nürnberg where, in 1472, he established a printing press, and in that year published the globe theory of his mentor, Peuerbach. In 1474 he published his *Ephemerides,* navigational tables showing the daily positions of the heavenly bodies for the period between 1475 and 1506. The work was meant for astrologists, though it was also used by Columbus. Another popular publication of his was a perpetual calendar, a Hungarian version of which appeared in 1592.

Pope Sixtus IV summoned him to Rome in 1475, to provide advice on the reform of the Julian calendar. Before starting to work on this, he died of plague there. The calendar proved to be a demanding task, and it was not until 1582 that Gregory XIII could issue his bull on the reform and give the world the Gregorian Calendar.

Marcin Bylica z Olkusza studied astronomy in Cracow. In Bologna he met Janus Pannonius, a Hungarian poet who wrote in Latin and who later, as bishop of Pécs, invited him to Hungary. Subsequently, Bylica assisted Regiomontanus, then working in Hungary, in the compilation of the *Tabulæ directionum.*

At the time of the conspiracy against Matthias (1471) Regiomontanus left the country; the Polish astronomer stayed on, and was later made Abbot of Gönc. As the royal astrologer, he enjoyed three further benefices. Matthias intended to

give Bylica a post at the planned University of Buda, but the institution never came into being.

After the death of the king, Bylica was in the service of Miklós Báthori, Archbishop of Eger, Péter Váradi, Archbishop of Kalocsa, and of course Vladislas II. He died around 1493, and willed some of his property, including his beautiful instruments, to Cracow, where they are still kept in the museum of the Collegium Maius.

The oldest calendar printed in Hungary dates from 1568 and was produced in Kolozsvár. Ten years later a Besztercebánya (Banská Bistrica) press printed Pribicerus's pamphlet on a comet, and in 1578 a similar work came out from the Heltai printing press in Kolozsvár (Cluj). The following year also saw the appearance of a volume on comets, by András Dudith, the notable humanist who had studied in Padua, and whose daring to turn against superstition in 1570 was no small feat. He lived at the court of Stephen Báthory, Prince of Transylvania and King of Poland. So did an Italian, M. Squarcialupi, the king's physician, who also had an interest in comets and who, in 1581, published a work in Nagyszeben on polar lights. Another celestial phenomenon, meteor showers, was treated in the 1575 *Chronicle* of Gáspár Heltai.

The Gregorian Calendar was legally adopted here in 1588, six years after the papal bull.

The Protestants set up an astronomical observation post in Debrecen in 1740, with the help of György Maróthi, and a similar post was established in Sárospatak in 1755, to promote education at the College. Miklós Jánossi prepared plans for an observatory in Kolozsvár between 1734 and 1739, but construction at the Jesuit Academy was not started until 1753, to the plans of Miksa Hell, who then taught there, designed it. (Hell had taught at Lőcse and Zsolna, and in 1755 became director of the observatory at the University of Vienna.)

Also famous was the observatory in Eger, also designed by Miksa Hell and built in 1776. Its first director was János Madarassy. Hell was approached by the founder, Archbishop Károly Esterházy, and the illustrious astronomer, then living in Vienna, answered thus: "There is nothing I wish to do more than to serve my country as well as your Excellency in this manner."

In Gyulafehérvár (Alba Julia) it was Bishop Count Ignác Batthyány who established a major scientific collection in 1796, together with a small observatory. Earlier, in 1790, he had already built a private observation post in Kolozsvár. The Gyulafehérvár establishment was directed by a student of Hell's, Antal Mártonffy.

It should be clear that Miksa Hell, a Jesuit, had an important role in the establishment of almost all of the early observatories. He lived in Vienna for 32 years, and there published a number of famous *Ephemerides*, that is, almanacs. Venus was to pass before the Sun in 1769, and the Danish king invited him and János Sajnovics to make observations at Vardö. Their observations of 3 June helped them calculate the solar parallax, the distance of the Earth from

the Sun. Their measurement was questioned by contemporaries, especially by Lalande, yet the accuracy of Hell's figures was later confirmed. It was an achievement that had the greatest international recognition of any during the classical phase of Hungarian astronomy.

Hell also developed a method for determining latitude which is still important. While in Scandinavia, the two Hungarians corrected several erroneously charted points on the coast of Norway. It was during this expedition that Sajnovics noticed similarities in the Hungarian and Lapp languages. Hell was interested in history, and wrote a work in which he attempted to identify place names in the first Hungarian chronicle, the 12th-century Chronicle of Anonymous. No easy task, as for instance Szíhalom near Eger appears in Anonymus as Zenuholmu. In 1772 he published his findings on a map, which was reprinted in 1801. One of the most knowledgeable astronomers of the 18th century, Miksa Hell was instrumental in the development of astronomy in Hungary.

In 1777, he helped in the planning of a new observatory in Buda. This belonged to the university, which had been transferred from Nagyszombat that year; it had a new department of *Geometria practica,* which gave basic instruction in astronomy to students of engineering. (Some of the instruments were left in the Nagyszombat Observatory, and Ferenc Bruna used these to make observations for some more years.)

Until 1785 the Buda Observatory was directed by Weiss, who was the first to determine the meridian of Buda, an experiment that preceeded a similar one in London. The best Hungarian astronomer of the period was Pál Tittel, who corresponded with Gauss. He made the Buda Observatory an institution of European renown, introduced the precise signalling of noon, and took up arms against the superstitions fuelled by astrology. He was a pioneer popularizer of astronomy, and he contributed important entries for the first Hungarian encyclopaedia, *Közhasznú Esmeretek Tára* (A Treasury of Useful Public Knowledge). He was the first astronomer to be a member of the Hungarian Scientific Society, just as he was their first member to die, a victim of the 1831 cholera epidemic.

In 1871 a landed proprietor, Miklós Konkoly-Thege, built a private observatory in Ógyalla, for which he was able to provide first-class equipment. Between 1871 and 1893 he published his observations on sunspots, planets, comets, meteors and asteroids in fourteen volumes. His first assistant was Radó Kövesligethy, who was joined later by Béla Harkányi. The latter's study, dated 1902, is considered a fundamental publication in modern astrophysics.

Konkoly-Thege also helped the bishop Lajos Haynald, who established an observatory in Kalocsa in 1878. Thanks to the founder and the Jesuit Gyula Fényi, this too became an acknowledged seat of learning. Fényi recorded protuberances for thirty years, and studied their position in relation to sunspot activity. His photographs appeared in western textbooks for many years.

Following the Ógyalla example, Baron Frigyes Podmaniczky established a small observatory in Kiskartal in 1885, where important observations were later made. Another private observatory, which specialized in meteors and which had ties with Konkoly-Thege's, was built in Pozsony by Károly Polikeit.

1881 saw the establishment of a new private astrophysical observatory by Jenő Gothard who, on his Herény estate, set up the reflecting telescope he bought from Konkoly-Thege. His achievements in astrophotography and spectrophotography were considerable. In 1884 he discovered periodic changes in the H-alpha (hydrogen-alpha) emission line of the eclipsing binary star, Beta Lyræ. Internationally renowned in astrophotography, a great constructor of instruments, he became a member of the Hungarian Academy in 1890, and was later elected to the Royal Astronomical Society.

In 1899 Konkoly-Thege donated his observatory to the state. Under his directorship it continued as an official institution, offering the opportunity of field work to students, and receiving such visitors as the mathematicians Lipót Fejér and Lajos Terkán. Antal Tass, a former deputy director, became the next director. The observatory studied meteors and sunspot activity, made photometrical observations, and compiled a spectrum catalogue.

Konkoly-Thege died in 1916, and as he had requested, some of the instruments in Ógyalla were transferred to Buda. There a new observatory was built between 1921 and 1928, whose first director was Antal Tass. After 1916 the country had only one smaller observatory, the private observation post in Erdőtagyos, founded by another landed proprietor, Károly Posztóczky, in 1918.

The new observatory in Buda was among the most modern in Central Europe. The staff included László Detre, who gained an international reputation for his studies of the changes in the periods and amplitudes of variable stars. In 1934 this workshop of the university became an Institute of Astronomy.

Perhaps the most important astronomer of the post-war period was Imre G. Izsák, who in 1957 wrote a study on the movement of satellites, and who later became director of the celestial mechanics department of NASA. He was one of a number of Hungarian scientists after whom craters were named on the other side of the Moon. (The others include Tódor Kármán, Miksa Hell, Radó Kövesligethy, János Bolyai, Loránd Eötvös, Gyula Fényi, John von Neumann, József Petzval and Jenő Gothard.) The feat that earned him this distinction was his proving that the equator of the Earth is a flattened ellipse, which makes the planet a three-axis ellipsoid.

The major names in physics

Proponents of Newtonian physics appeared quite early in Protestant and Piarist colleges, perhaps even earlier than at the Nagyszombat university. In Calvinist Debrecen, István Hatvani and György Maróthi became the

"popes" of natural philosophy; they had encountered modern thought in the Netherlands, and spread it in colleges in Hungary. Johann Andreas von Segner (born János András Segner) also taught in Hungary for a short time, before settling abroad and becoming a noted professor at German universities, as well as the developer of a reaction turbine he described in 1750. The famous work in natural philosophy of István Hatvani, "the Debrecen Faust," also a physician, appeared in 1757. István Tőke's reformed physics was published by the Nagyenyed (Aiud) press in 1736. As for the Piarists, Kajetán Poór was teaching Newtonian physics in their Pest college at an early date.

As the above indicates, Newtonian-Leibnitzian mathematics and experimental physics had become fully accepted in Hungary by the middle of the 18th century —first at colleges and universities, and later in schools. This was experience-based natural philosophy relying on experiments; physics had thus triumphed over speculative natural science. And if the medium was initially Latin, the *lingua franca* of science at the time, in the process of physics becoming a specialized branch, Hungarian also came to be an acceptable means of expression.

The 1770s saw the appearance of the first works, especially of popular science, in Hungarian. Such was Benjámin Szőnyi's *Gyermekek fisikája* (Children's Physics, Pozsony, 1774), or *A természetiekről. Newton tanítványinak nyomdoka szerént hat könyv* (On Natural Phenomena. Six Volumes after Newton's Disciples), by an ex-Jesuit teaching in Győr, János Molnár.

The person who did most at the time for science at the university was József Ferenc Domin. Unlike his predecessors at the head of the physics department —he was also rector of the university in 1798—his interests lay not in mechanics but electricity, and he is held by many to have been a pioneer of electrotherapy. It is also worth noting that only one year after the Montgolfier brothers, on 1 March 1784, in Győr, he experimented with a hydrogen-filled balloon, which did not carry a passenger.

His successor, Ádám Tomcsányi, was professor of natural sciences until 1831, and like Domin, was a widely-educated scientist. He was the first in Hungary to be an expert on galvanism and he wrote a lengthy work on the topic. A year earlier Márton Varga had mentioned voltaic currents in his Hungarian volume, but Tomcsányi's treatment was far more thorough. He had another important volume, in geology, co-authored by Pál Kitaibel, discussing the 1810 earthquake in Mór.

After much argument and official wrangling, the physics department was taken over, in 1839, by Ányos Jedlik, whose inventions had earned him distinction at World Fairs. He retained the position until his retirement in 1878.

Jedlik's first important invention was an electromagnetic motor, the first such device in the world; since he failed to notify the international scholarly community in time, the first is now attributed to someone else. In 1828 he wrote to Ágost Heller:

"When I prepared a working model of a device transferring voltaic power into rotary motion, in 1827–28, I could find no mention of such a device in journals."

Later he constructed a soda water machine, and established a small and successful firm (1841), which he passed on to his relatives. Another important invention was a device for making optical gratings, with which 150 grooves to the millimetre could be etched on glass plates. What really mattered was not the number of grooves but their uniformity, vital for spectroscopy. No other device could produce such fine gratings at the time.

In the 1850s he designed a battery for mass production of which he built a small factory, together with two partners. The patent was later bought from him by a French entrepreneur.

The invention the Hungarian public associates with his name is his unipolar dynamo. He built the first such device around 1860–61. It produced only a low voltage, and could not be used in industry. Siemens and others later constructed —independently of him—the version suitable for industrial use. Better known at the time were his capacitors, which he connected to create a storage battery. The invention was very successful at the 1873 Vienna World Fair.

As a teacher, he was a great experimenter, although the mathematics he used was rather simple. As Loránd Eötvös wrote, "it was without the necessary education, the support or guiding advice of those progressing in the same direction, but relying on his own resources and unflagging love for science that he became one of the inventors of the century." To which it should be added that he was one of the greatest inventors of the 19th century. Jedlik was succeeded by Loránd Eötvös from the 1878/79 academic year; he had been giving lectures in experimental physics since 1874, and he headed the department until his death.

The first field he achieved success in was capillarity. He published the results in the bulletin *Mathematikai és Természettudományi Értesítő* (Mathematical and Scientific Journal) only in 1884–85, which proved to be so important that now in the literature they are referred to as the "Eötvös Law." In these studies he pointed out that the molecular surface energy of various, so-called simply complex liquids changes in direct proportion to the change in temperature. The change, in other words, is independent of the quality of the matter and of temperature.

Another large field he studied, gravitation, involved theoretical considerations, as well as the development of reliable instruments, which Eötvös produced with great success. He examined gravitation with a balance like Cavendish's, and measured the earth's field of gravity with an improved version of Coulomb's torsion balance. Both instruments surpassed the accuracy of their predecessors. His ultimate achievement was his own torsion balance, with which a scientist could step out of laboratories and do field work, with well-known practical consequences.

It was also from the 1880s that he studied the relation of gravitational and inertial mass, a question Newton had tried to resolve but lacked a sufficient instru-

ment. Eötvös set up a good hypothesis with his torsion balance by 1889, and by 1909 he had considerably increased the accuracy of the measurement. (Meanwhile, he published his study summarizing his findings on the gravitational field of Earth in 1896.) That the two masses are equivalent was assumed by Einstein as well, though at the time he developed his general theory of relativity he was unaware of Eötvös's exact figures. While Eötvös maintained the equality of the measures, Einstein was already considering the issue on a more abstract level, and was talking about the equivalence of the force fields. Eötvös's experiment is nevertheless important for proving the theory of relativity. (Einstein himself thought highly of Eötvös, of which the extant professional letters he sent him bear testimony.)

With a similar balance, but more like Cavendish's, by 1891 Eötvös had obtained the most accurate measurement of the gravitational constant, G. In this work he was assisted by Radó Kövesligethy and Károly Tangl.

Eötvös was essentially an experimental physicist, and if he was well aware of problems of theoretical physics, he was noncommittal in questions concerning them. Unfortunately, he did not create a school; though his geophysical experiments had many followers, as a teacher or theoretician of physics he had none.

The Budapest Technical University carried on the tradition of Mór Réthy, and Győző Zemplén's lectures treated all major topics in modern physics at the time. Lectures in theoretical physics at the Kolozsvár University were given by no less a scientist than Gyula Farkas; in 1915 he was followed by Rudolf Ortvay. Ortvay later had a distinguished career in Szeged and Budapest.

Experimental physics also had its great lecturers at these universities. In Budapest, before the First World War, Alajos Schuller and Ferenc Wittmann headed the experimental and technical physics department, respectively. (Schuller was succeeded by Károly Tangl in 1917). In Kolozsvár Tangl, and then Béla Pogány were professors of experimental physics.

At the Budapest University Science Faculty the physics taught became really up-to-date in the 1920s. Eötvös died in 1919. In 1921 a former student of his, then professor at the Technical University, Károly Tangl, was invited to be head of the experimental physics department. Students of theoretical physics were at long last introduced to modern developments, when Rudolf Ortvay, formerly teaching at Kolozsvár and Szeged, took over the department. These two professors were responsible for making this university, through the years between the world wars, a workshop where high-standard experimental and theoretical physics were taught. They were also instrumental in the publishing of textbooks and scholarly studies.

Tangl headed the experimental physics department until his death in 1940. He was followed by Professor Rybár (until 1949), whose own department was in turn taken over by György Békésy, who was later awarded the Nobel Prize.

Ortvay too headed the Theoretical Physics Institute until his death in 1945. His department was probably the one that did most for the credit of the university.

Rudolf Ortvay followed the route marked by his predecessor, Győző Zemplén, who had died young (he was in effect his contemporary, being only six years his senior). On graduating, Ortvay undertook—as was customary at the time—a study trip abroad, and was lucky to work with Sommerfeld in Munich. The year being 1912, the first steps in quantum mechanics had hardly been taken: Bohr would publish his model and Stark discover the effect named after him in 1913, Franck and Hertz performed their experiment in 1914, and Sommerfeld did not introduce his own model until 1916.

Ortvay's great contribution to teaching was the introduction of duplicated notes. His summaries of quantum mechanics and electrodynamics were later collected and published in book form. His best-known work is his *Bevezetés az anyag korpuszkuláris elméletébe* (Introduction to the Corpuscular Theory of Matter), appeared in 1927. He was the first in Hungary to write a serious treatment of Einstein's general theory of relativity, and the quantum theory of the twenties. He is also remembered for a famous lecture series with such guests as Dirac, Bothe, Debye, Heisenberg, Bródy, Neumann, Polányi, Teller, Tisza, or Wigner. "A small university department tried to repair what the politicians of the country neglected," says a historian of the time. Not only politicians were to blame but also earlier professors of physics at the university.

The teaching of physics in Hungary suffered badly in the latter part of the period between the wars: the insane persecution of scientists of Jewish origin forced many to leave the country: Tódor Kármán, Kornél Lánczos, John von Neumann, Leó Szilárd and Eugene Wigner were the most notable. Others emigrated in subsequent years for other reasons; they include Zoltán Bay, György Békésy, Dénes Gábor, Nicholas Kürti and László Tisza. Wigner, Békésy, Gábor, Albert Szent-Györgyi, and György Hevesy were awarded Nobel Prizes. György Oláh, who left the country in 1956, received the Nobel Prize for chemistry in 1994.

Some of those who did not escape came to a sorry end: Béla Pogány, who did notable work in theoretical physics, Rezső Schmid in molecular spectroscopy, Pál Selényi and Loránd Gerő all died during the war. Imre Bródy, one of the inventors of krypton-filled light bulbs, died in a concentration camp in 1944.

Scientists in Hungary, physicists included, found it difficult in the fifties to restore the pre-war standing of their fields, even though many notable scholars stayed and some returned: Pál Gombás, Zoltán Gyulai, Ágoston Budó, Imre Fényes, Géza Györgyi, János Horváth, Lajos Jánossy (back from England), Károly Simonyi, Sándor Szalay, Tibor Neugebauer and others. They were all highly qualified, but some of them were nevertheless denied—for economical and political reasons—the possibility to live a scientist's life and to make contributions that would gain international recognition.

Chemists

The first department of chemistry was at the Selmecbánya (Banská Štiavnica) college, and its first professor was a physician-botanist-chemist, N. Jacquin, who was born in the Netherlands. He taught there for six years, and when later his chemistry textbook appeared (1783), it became compulsory reading at his old college. His successor was similarly well-qualified: G. Scopoli came from South Tyrol and in 1771 wrote a course book for his students. He was known all over the country, and his work on the three realms of nature could be found in the library of Csokonai, the erudite poet of Debrecen, and his learned friends were obviously also familiar with it. Selmecbánya appears to have been a seat of learning of growing importance, at least on the evidence of the work of Antal Ruprecht, successor to Scopoli and disciple of Bergman. He was a proponent of so-called antiflogistic chemistry, and he provided his students with the most modern introduction to the discipline. In 1792 he was succeeded by Ferenc Müller, who gained international distinction by discovering an element (tellurium), which is a rare glory among chemists. Apart from for the renown of these individuals, Selmecbánya became famous for its curriculum. It was the first college in Europe where laboratory practice was compulsory for students. When the syllabus of studies of the École Polytechnique in Paris was being prepared in 1794, the main inspiration was the Hungarian college. When Liebig introduced this method in Giessen he was following the French example, and it was as such that it became known in Europe. However, the roots go back to Selmecbánya. In this golden age of the institution a successor of Müller, Alajos Wehrle, made a discovery, this time of a mineral, which was named after him (wehrlit).

Maria Theresa decreed that each county employ a medical officer, whose duties included the examination of mineral springs. It was mainly through the offices of these men, who used analytic techniques, that the mapping of the mineral resources of the country began. This was given a boost when the Nagyszombat University started a medical faculty in 1770; within it a chemistry department was set up, whose first professor was the knowledgeable Jakab Winterl. Botanists honour him as a major figure in their own field. It was in 1800 that his chief work appeared, a polemical treatise on chemistry, which did indeed start a debate and ultimately contributed to the development of analytic chemistry, even if Winterl proved to be wrong in several of his claims and hypotheses. In 1777 the university moved to Buda, then shortly after to Pest; Winterl did his best to turn the city into a seat of learning: he started a botanic garden and a learned society. One of his followers, József Oesterreicher Manes, in 1781 produced a better analysis of the Buda mineral waters than anyone had done before. He also entered the annals of Hungarian science as the first chief medical officer of the spa of Balatonfüred.

Winterl's contemporary in Kolozsvár was András Etienne, from Luxembourg, who taught there starting in 1793. His 1795 textbook was written in the spirit of

Lavoisier and was the most modern work in chemistry in Hungary at the time. His successors unfortunately reverted to following less advanced schools.

The first book on chemistry in the Hungarian language was written by Ferenc Nyulas, in 1800. "No one has ever analysed waters in Hungarian, even chemistry is a newcomer to the language, hence I had to coin many new words if I wanted this work to be truly Hungarian," he wrote. *Az erdély országi orvos vizeknek bontásáról közönségesen* (On the Analysis of the Waters of Transylvania), published in Kolozsvár by Márton Hochmeister, was the first serious Hungarian work in analytical chemistry. (Popular volumes had already appeared, such as János La Langue's 1783 pamphlet on the waters of Nagykároly, and József Babocsay's book of 1795 on the Sopron springs.) Hochmeister studied in Kolozsvár, Vienna and Pest, and graduated in 1788 as a physician. He was first the chief medical officer of Doboka county, then of Kolozs county, and became responsible for all Transylvania in 1806. He promoted Jenner's smallpox vaccination, and spent a decade studying the ferrous waters of the Radna region. His three-volume work is a summary of these studies. He was also among the first to analyse the water of the famous Borszék springs. In it he identified a special element, which was thought to be magnesium, but which in fact was manganese-carbonate, as Berzelius pointed out in 1807. He was the first to identify this compound in mineral water. He also proved experimentally that carbonic acid can retard the rotting of meat, and the compound could be effectively used in meat preservation. The idea did not catch on at the time, and 82 years had to pass before Kolbe showed again that carbon dioxide is antiseptic.

Ferenc Nyulas was one of the great fountainheads of the vocabulary of chemistry in Hungarian. That his findings remained poorly publicized was due partly to his isolation in Transylvania, and partly to the public's mistrust towards novel discoveries as well as his meagre financial means. On the latter he wrote: "Our purse will not finance a sulphur bath with Lavoisier, nor will the king pay for a trip to America with Jacquin, or to Siberia with Gmelin, and neither are we on an equal footing with Buffon, all of which is to say we cannot wander over hill and dale in search of the riches of nature without jeopardizing the dinner of our folks at home." Nyulas was Winterl's disciple, just as Mihály Kováts, who in 1807 issued a translation of Gren's work, under the title *Chémia vagy természet titka* (Chemistry, or the Secret of Nature). The great merit of the volume is that the translator coined several new Hungarian scientific terms. The subsequent decades saw many others trying to do the same.

Winterl's successor at the head of the chemistry department, János Schuster, also did a great deal for the Hungarian idiom of chemistry when he prepared for publication the writings of his predecessor, on the dualistic system of chemistry (1807), as well as Kitaibel's analyses of mineral waters (1829).

Phosphorous matches were much trouble to their users, as they ignited with a small explosion, as inconvenient as it was unsafe. Dipping matches were introduced in 1805, and friction matches had become widely used since they became

available in 1815, when in 1836 János Irinyi produced a safe and convenient formula. Born in 1817, Irinyi attended university in Vienna, and it was there that he substituted lead oxide for potassium chlorate, to obtain matches that ignited quietly and smoothly. Irinyi sold his patent to a Vienna match manufacturer, István Rómer, although he did not earn much in the deal. On his return to Pest, he built a small factory that operated between 1839 and 1845, not very profitably.

The modern phase of Hungarian chemistry started somewhere in the middle of the 19th century, perhaps with János Irinyi, or even with an interesting experiment by Artúr Görgey. The latter, who was to command the Hungarian army during the 1848–49 War of Independence, briefly interrupted a military career to study chemistry in Prague. It was there, while studying coconut fat, that he discovered lauric acid. Unfortunately, little is known about the circumstances of the discovery. After the suppression of the revolution, Austrians were placed at the head of several departments at the Pest university. The chemistry department received a new head, after the Austrian Wertheim, in 1862; political considerations were put aside for the sake of Károly Than, who had been assistant lecturer at the University of Vienna since 1859, and had Bunsen as a referee.

Károly Than directed this department for 48 years, teaching modern chemistry to several generations of students, and not only chemists. Medical students and would-be teachers also became versed in the elements of the science. Than himself was knowledgeable in several branches of chemistry, including pharmaceutics, as he had studied medicine and pharmacy in Vienna. His knowledge persuaded the authorities to ignore his record in the 1848 War of Independence, and they did not object to the Hungarian Academy electing the 26-year-old scientist to be a corresponding member.

In 1864 Than suggested a new system for registering the composition of mineral waters, in the form of the determinable components, anions and cations. It became accepted only after ion theory was fully developed. Since then, Than equivalence has been the standard mode of denoting the composition of mineral waters. 1860 was the turn of Than salt, which has ever since been used to fine-tune the potency of analytical acidimeter solutions. He was the first in Hungary to write on spectroscopy, the elements of which he must have learnt in Bunsen's laboratory. In 1867 he discovered carbonyl-sulphide, for which he was awarded a prize by the Austrian Academy of Sciences. Perhaps his most important publication came in 1887, in which he defined the concept of the molecular volume of gases.

In 1877 the university started a second department of chemistry, under Béla Lengyel. His chief duty was to teach chemistry to pharmacy students, initially with rather limited facilities. Than himself taught medical students, and teacher trainees could choose between the lecturers. They both wrote textbooks, providing a sound basis for the teaching of modern chemistry.

Producing pure calcium and strontium was a remarkable feat at the time: Béla Lengyel and his assistants displayed the pure metals at the 1900 Paris Exhibition. Lengyel was among the first to notice radioactivity; Irén Götz, who later became Madame Curie's assistant in Paris, was his doctoral student. The first woman to earn a doctorate in chemistry was Laura Kovács, Than's student. The second, Thyra Breitner, had Gusztáv Buchböck for her tutor. Irén Götz was the third female doctoral student. She was born in Mosonmagyaróvár in 1889, attended secondary school in Budapest, and then went on to study at the University. She published several articles in *Magyar Chemiai Folyóirat* (Hungarian Chemistry Journal, which was founded by Than), before receiving a fellowship, with which she visited Madame Curie's laboratory, where there was another Hungarian, Béla Szilárd. It was in Paris that Irén Götz met the young librarian, László Dienes, who was there on a collection trip. They married, but Götz could not find a post on their return to Hungary. She received a university position only during the short-lived Communist regime of 1919, in April, when her husband was made a commissar. On the collapse of the regime, they had to flee. They went, via Vienna, to Kolozsvár, where in 1926 Dienes started *Korunk,* a journal that still exists, in which his wife could publish on Einstein and Madame Curie, the transformation of elements and the foundations of modern chemistry. Later they moved on to Berlin, and then to Moscow. They raised three children. After a show trial she was imprisoned, like many other Hungarian scientists living in the Soviet Union. She was released in 1941, but died shortly afterwards of typhoid. László Dienes survived these gruesome times, and returned to Budapest in 1945, where he became the director of the Metropolitan Library.

The first Hungarian journal specializing in chemistry, *Vegytani Lapok* (Chemical Papers), was founded by Rudolf Fabinyi, professor of chemistry at Kolozs vár University, in 1882. This, and the already mentioned *Magyar Chemiai Folyóirat* (1885) were only preceded by *Vegyészet és Gyógyszerészet* (Chemistry and Pharmacy).

A great achievement of the chemists of the 1880s was the construction of a giant battery, which could supply enough energy for street lighting; the battery was designed and built by István Schenek and István Farbaky of the Selmecbánya Academy. Lajos Ilosvay of the Budapest Technical University was the first to introduce ion-specific reagents to detect and specify nitrites, in 1889. In 1893 István Győri discovered the method of titration, used in chemical analysis ever since. Of Than's students, perhaps Lajos Winkler became the best known, as an expert in volumetric and gravimetric analysis, the developer of several analytic methods. Vince Wartha and Ignác Pfeifer developed a method for determining the hardness of water that was long to remain in use, while Wartha's eosin glaze helped to make Zsolnay ceramics world famous. Ignác Pfeifer became Wartha's successor at the head of the chemical technology department at the Technical University, and later headed the research laboratory of Egyesült Izzó (United Incandescent Co.), and was thus in no small part responsible for the worldwide success of the products of the company. István Bugarszky of the University in-

vented the first endothermic galvanic cell in 1897. Pál Szily's report, which laid the foundations of colorimetric pH-metering, appeared in 1903. Gusztáv Buchböck published his method of examining the hydration of ions in 1906. Hungarian chemistry started producing internationally accepted results within a very short period after Károly Than took charge of the chemistry department in Budapest.

The Hungarian to make the greatest impact on chemistry in this period was György Hevesy. It was while working under Rutherford in Manchester that he became interested in radioactive isotopes. Through a series of experiments at the University of Vienna (1912), conducted together with G. Paneth, he developed the technique of using isotopes as tracers, opening the way for their wide use in science and medicine. His achievements were honoured with a Nobel Prize in 1943. In 1920 he made another important discovery: in Budapest, together with László Zechmeister, using his radioactive tracing method, they proved the intermolecular exchange of atoms, thus corroborating Arrhenius's theory of electrolytic dissociation.

After Ferenc Müller of Nagyszeben, Hevesy was the second Hungarian to discover an element: following Bohr's hint of an element missing from the periodic table, Hevesy and D. Coster found what they named hafnium in 1923. Hevesy also developed analytic methods such as isotopic dilution and X-ray fluorescent analysis, not to mention his contribution to neutron activation analysis.

Leó Szilárd, known primarily as a physicist, also worked in chemistry, and described a phenomenon of nuclear chemistry, which is now referred to as the Szilárd-Chalmers effect. Michael Polányi, who lived in Germany from the twenties on, before moving to England, also proved to be an eponym in chemistry (the Polányi Rule), discovering the relation between, on the one hand, the activation energy of reactions between radicals and molecules, and, on the other hand, reaction heat. He also gave his name to the absorption potential of gases. In the latter part of his life he became an important philosopher of science. His son, John, received the Nobel Prize for chemistry in 1986.

Many of those who stayed at home also made a name in their fields. Biochemist Géza Zemplén (brother of the above-mentioned physicist, Győző Zemplén, both professors of the Technical University) not only discovered a process of sugar decomposition, but also created a school of biochemistry of international renown, whose most important figure, György Oláh, was awarded the Nobel Prize in 1984. Chemist Aladár Buzágh worked with Ostwald, and formulated a rule of sedimentation in connection with gels; he laid the foundations of Hungarian colloid chemistry. The volume compiled by Hungarian scientists in 1937 on chromatographic methods (written in German, the *lingua franca* of chemistry at the time) became a standard reference work in the field. The method of coulometric titration was developed by Hungarian chemists in 1938, and became widely used.

The best known contemporary Hungarian chemist is probably György Oláh, who has tried—successfully—to produce car fuel from carbon dioxide in the air. ❧

László Sipka

Innovators and Innovations

Thanks to archeology and a study of the contemporary sources, we now have a much more detailed picture of the Magyar tribes which settled in the Carpathian Basin 1100 years ago. Searching for a home to settle in, they already possessed a wide range of knowledge, gained during their life on the steppes; this knowledge and experience included animal husbandry and farming, the use of the stirrup and the wooden-frame saddle, the processing of leather, toolmaking, the making of weapons (especially the famous reflex bow), spinning, weaving, tailoring, ornamental metalwork and the preparation of cooked meals. Their eating of meat led to a unique invention: when cooked meat was dried and pounded, it could be kept for a long period of time. Boiled in water, meat prepared in this way could provide a nutritious soup. Their warriors took this meat and a shredded dried pasta (*tarhonya* still used in the Hungarian home) with them on raids that could last for months at a time.

Hungary's first king, Stephen, was crowned in the year 1000. Stephen laid the foundations of the Hungarian state, the counties and the ten bishoprics he established are still in existence. The first mint in Hungary was established (in Esztergom, where the King held court). This mint introduced an old engraving method to minting, the edge of the coin (the silver Denarius) being decorated with a row of fine dots. There were several advantages: the dots on the most vulnerable part of the coin made clipping or removing the silver much harder). As a result, Hungary's coinage became one of the most favoured in Europe.

A significant invention was the pivoting of the front wheels of carts. The pivot allowed the cart or wagon to turn quickly within a very small radius. A lightweight coach with small front wheels, indicating a pivoted assembly, was first mentioned in writing by a French knight, Bertrandon de la Brocquère, who visited Hungary in 1433. In that same century, the *kocsi,* a four-wheel horse drawn vehicle developed in Hungary, was an exceptionally practical form of passenger and light freight transport. It began to be produced in large

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numbers. The actual name comes from the village of Kocs and the origin is reflected in other countries where it began to be used or manufactured: *Kutsche* in German, *coche* in French, *coach* in English, *coccio* in Italian, *goetse* in Flemish, *koczi* in Polish, *koczy* in Czech, and *kusk* in Swedish. (Even in the Caucasian region the word used was *madzsar,* the local name for Hungarian-type carts.)

Several countries may claim Faustus Verancsics (1550-1617), who was born in Dalmatia, and educated in Hungary from childhood (in the Pozsony home of his uncle, Antal Verancsics, the Archbishop of Esztergom). After studying at the university in Padua, he returned to Pozsony to devote himself to the study of scientific problems. He was given the captainship of the castle of Veszprém, in western Hungary, before becoming the Emperor Rudolf's secretary for Hungarian affairs. Later he became a priest and ultimately the Bishop of Csanád. In the last one and a half decades of his life he went to Italy, where he became a monk. He lived in Rome and Venice and his writings were published there. He compiled a five-language dictionary—Latin, Italian, German, Croatian, Hungarian—which was published in 1595. All his life he pursued solutions for technical problems, thus developing several new ideas and inventions. In 1616 he published *Machinæ Novæ,* which was a summary of his ideas and a significant work in the history of science. The book describes more than sixty inventions, forty-nine of them with detailed illustrations. His inventions cover a wide range: grinders, windmills, tide-mill, compacting machine, twelve variations of bridge structures, the suspension-bridge, the parachute (closer to the present paraglider), a dredger, a rope-weaving machine, a steel spring and friction brake for coaches.

From the fifteenth century French tanners were familiar with the Hungarian method of tanning *(hongroyage),* which used the chemical alum. In the seventeenth century "Hungarian tanning" was used in several European countries and especially in France. In the middle of that century, the French tanner La Roche studied leather-making in Hungary. Jean Baptiste Colbert, the finance minister of Louis XIV, invited Hungarian tanners *(hongroyeurs)* to France under highly advantageous conditions. Part of the Paris Leather Code, written in 1673, states that "Only leather prepared by the Hungarian method shall be used for straps used for coaches." High resistance leather, manufactured by the Hungarian method, was used mainly for straps, load-bearing belts and girdles.

In the later Middle Ages, the Hungarian Kingdom, more precisely Transylvania, was an important producer and supplier of gold and silver for centuries, first in gold, second in silver. Her importance diminished with the the discovery of America and the arrival of the Turks, which occured after it, although mining remained significant. Several technical advances were made in mining and metal processing.

From the seventeenth century on, Selmecbánya (now Banská Štiavnica) and its vicinity (in old Northern Hungary) was a significant mining and metal processing centre. Water was and is important in mining, in that it had to be brought to the surface where it was a godsend, used for operating equipment. Too much or too little water caused equally large problems. To get around these, the decision was made to build a water management system in the early 1700s, involving the construction of a huge water reservoir. Sámuel Mikoviny had a significant role in the final workings of this grandiose project. In its time this construction was unique, it included 16 ponds with 7 million cubic meters of water. A system of almost 130 km of drains was used for nearly 200 years afterwards.

This system is a significant monument and has been a World Heritage site since 1995.

Mining at Selmecbánya required organized training for the 7 to 8,000 involved, and this included higher education. The institute for the training of miners and foundrymen was established in 1735, the first of its kind anywhere. In 1770 it was upgraded to a tertiary institution. Sámuel Mikoviny was the first lecturer here, a man who is also one of the greatest names in Hungarian cartography. Students performed laboratory experiments in this institute on their own—another innovation—the French copying the idea in 1794 at the École Polytechnique, before it became general practice.

One of the most significant innovators at Selmecbánya was Károly József Hell, who built power engines based on new principles: in 1738 his beam-box water-raising engine was introduced; in 1749 the first water pressure piston pump (a reliable and efficient pump that rapidly spread in Hungary and abroad, several of them still operated over a century later); in 1753 his was the first "air-lift", for the first time utilizing air pressure to elevate water (thus eliminating the pump). This principle is still in use in current hydrocarbon extraction. In 1758, Hell improved a "fire-engine" already in use at Selmecbánya (its first steam-engine).

In 1729 Sámuel Köleséri was the first Hungarian elected to the Royal Society in London. This distinction was awarded for his study on gold mining in Transylvania, *Auraria Romano-Dacica.*

The first international scientific congress on mining was held at Szkleno near Selmecbánya in September 1786: 27 scientists from eight countries participated and studied the new method of extracting precious metal developed by Ignác Born. Born was a distinguished metallurgist, who published his method and made the practice available to everyone. Here, at the same time, the world's first international technological and scientific society, the *Sozietät der Bergbaukunde* was established. The society only functioned for a few years due to the wars following the French Revolution; its 150 members included James Watt, Lavoisier and Goethe. The aim: "To collect every possible information which is useful to miners and disseminate this knowledge among the members in order to make them useful in their own countries for the improvement of mankind."

From the 1730s, Ferenc B. Kéry built reflectors (telescopes made of concave metal mirrors) at the University of Nagyszombat. Some of them were unusually large for that time. Several of his astronomic instruments were in use far from Hungary: the Jesuit János Zakariás wrote in 1749 that Kéry telescopes were used at the University of Peru.

In 1747, András János Segner, who was born in Pozsony (now Bratislava) and taught at universities in Germany, introduced his new principle of the Segner-wheel, a water reaction turbine. This principle is familiar today to everyone who waters their lawn, in the form of the garden sprinkler.

In 1770, the Sultan of Turkey commissioned Ferenc Tóth to construct the defences of the Dardanelles, including the establishment of modern Turkish artillery and sappers. Tóth, originally from Hungary, had been a captain of the Bercsényi Hussars in the Royal French Army and had served as a French diplomat in Constantinople. He advocated cutting across the Isthmus of Suez and even prepared plans for a canal for Sultan Mustafa III.

1782 saw the establishment of the Institutum Hydrotechnico-Geometricum at the University of Buda. It was the first tertiary institution that awarded degrees in engineering to civil engineers.

Farkas Kempelen was one of the eighteenth century's notable figures. He tackled various technical and scientific problems and solved several of them. He was greatly interested in the arts as well. In 1769 he exhibited his chess machine, the Chess Playing Turk, to the court in Vienna; it attracted wide interest in Europe, although he regarded it as a mere toy. (The machine was lost and its operation has remained a secret.) He built a floating bridge, introduced water piping in Pozsony, and also designed the fountains at Schönbrunn. The move of the university from Nagyszombat (now Trnava) to Buda required his design, and he also contributed to the building of the Royal Castle of Buda. He also submitted a patent for a steam turbine on 17 July 1788. (He requested a 12-year exclusive patent for the Habsburg Empire for a device, which was the combination of a fire-engine and a reaction turbine.) His greatest accomplishment was the study of the human voice. He unveiled the secret of voice production after a decade of meticulous work. To support his findings, he built the world's first "talking machine" (he called it a voice imitator), which was displayed in 1790, and in the following year he published a book on acoustics, *Mechanismus der menschlichen Sprache,* which included a detailed description of his talking machine. His work laid down the foundations for biological linguistics. Farkas Kempelen and Ignác Born were friends, and Kempelen dedicated his book to Born, both of them well known figures in contemporary Vienna. (Mozart based Sarastro in *The Magic Flute* on Ignác Born.)

On November 3 1823, János Bolyai, a military engineer, wrote a letter to his father in which he described his discovery of a new (non-Euclidean) geometry. In 1832, at Marosvásárhely (now Târgu Mureş), he published his revolutionary work on absolute geometry in Latin. This 26 page study, "The absolutely true science of space", appeared as an appendix to the first volume of his father's mathematical book, *Tentamen,* therefore it was named Appendix. (The second volume of *Tentamen* was published in 1833.)

Another military engineer, Károly Kőszeghi-Mártony, invented in 1829 a breathing apparatus, which utilized compressed air in a steel tank, an invention which is still being used today by firefighters, and by rescuers and divers.

János Irinyi invented a match that produced neither noise nor an explosion in 1837. In the same year István Rómer, a Hungarian pharmacist in Vienna purchased the patent and started manufacturing Irinyi matches. In 1840 János Irinyi established his own match factory at Pest.

In 1840, József Petzval, an engineer and lecturer at the University of Vienna, constructed a high intensity, achromatic duallens (16 times more powerful than current lenses). The device was based on his own mathematical calculations. That same year Petzval invented the predecessor of the instantaneous shutter. Cameras equipped with Petzval lenses brought fame to the Voigtländer company.

1851 was the year of the World Exhibition in London, at which the products of the Herend Porcelain Manufactury were presented, with huge success. Queen Victoria, who visited the exhibition, immediately ordered a service with butterfly-floral decorations. This has remained one of the most favoured designs and is named in honour of Queen Victoria.

Railways in the nineteenth century revolutionized the transport of passengers and freight all over the world. Hungarian industry contributed with a significant invention. Ábrahám Ganz, a master of metal casting, was born in Switzerland and

moved to Hungary, where he established his own workshop within a few years, in 1844. He developed and patented (1853) a method of hard-casting, to be used for manufacturing carriage wheels. (Previously this method had been used only in America.) This process equipped the wheel with a very hard surface, allowing greater resistence to wear and tear. Within the following 10 to 15 years the Ganz plant was supplying railway wheels to approximately 60 companies all over Europe.

Based on this casting method, the company expanded its product range and started manufacturing various machines, bridge structures and other equipment. One of their most successful products was the diagonal flour roller-mill. In 1874 the company obtained the (very modern) F. Wegman flour mill patent from Switzerland. The technical manager of Ganz, András Mechwart, expanded this even further by replacing the fragile porcelain rollers with hard-cast and grooved steel rollers, making the machine suitable for mass production and allowing more reliable operation. Ganz mills, with a wide range of applications, were marketed all over the world, from America to Australia. Hungary provided additional important inventions for the flour milling industry, for example the flat screen shifter by Károly Haggenmacher, which revolutionized grain sorting in other industries as well, and the semolina and coarse meal cleaner. A simple and effective flour testing method was developed by Imre Pekár (named "pekaring" after him), which is still in use today. Not just specific machines, but complete and fully equipped mills were available from Budapest.

In 1860 János Luppis, a naval captain, constructed a model of his "coast defender", a form of the torpedo, in Fiume. In 1864 he presented the invention to the Austrian War Ministry, which, however, rejected it. Luppis turned to Robert Whitehead, an English factory owner in Fiume. They jointly developed a new weapon, the "mine-ship". On 26 December 1866 they introduced it to the Ministry with a new name, "torpedo" (electric stingray). The Ministry purchased the invention the following year. Two more Hungarians made important contributions to this weapon: Lajos Obry, a foreman at the arsenal, developed the gyroscope and the alternative pistons component for maintaining horizontal direction, and János Gesztessy, a naval lieutant, invented the heating equipment that was needed to prevent rapidly expanding compressed air from freezing.

Another major technology introduced in the nineteenth century was electrical power. Here Ányos Jedlik as well as the employees of the Ganz factory, made significant contributions.

Ányos Jedlik was a Benedictine, who taught in the order's schools at Győr and Pozsony before becoming the Head of the Physics Faculty at the University of Pest. He was engaged on a number of research projects, but decided to concentrate foremost on electricity. He developed several devices based on new insights and principles, although he was not interested in practical implementation. In spite of this fact, his achievements were important in the history of science and technology:

In 1829 he constructed the first rotating machine based on the electromagnetic impulse, which was the predecessor of the DC motor. In the 1850s he conducted optical and wave mechanical experiments, and at the beginning of the 1860s he constructed an excellent optical grate.

His journal records in 1859 that he discovered the principle of self-ignition and the fact that a remanent magnetic force in the core was sufficient for starting the process. In 1861 he constructed a "single-pole electric starter", which exploited the

principle of self-ignition. His machine was a unipolar generator with no brushes. Jedlik also recognized that when electricity was connected to the device, it became an electric motor.

In 1863 he discovered the possibility of voltage multiplication and demonstrated it with a "tubular voltage generator" (1868), which was successfully displayed at the 1873 Exhibition in Vienna.

In contrast to the theoretical approach of Ányos Jedlik, András Mechwart, the General Manager of Ganz, recognized business opportunities in electricity and in 1878 he established a separate electrical division within the works, the first of its kind. This division had an excellent work force, which was reflected in its subsequent success. In 1882 the illumination of the National Theatre was installed to the plans of Károly Zipernowsky. At the time, this was only the third theatre in the world to be illuminated by electricity (after the Savoy in London and the theatre in Brünn [Brno]). However, all had to use a local generator, as there was no method available for transporting electric power. This seriously handicapped the more widespread use of electric power, and experiments were conducted in many places to solve this problem. The first practical solution was found in Budapest, at the Ganz factory. In 1885 three engineers, Károly Zipernowsky, Miksa Déri and Titusz Ottó Bláthy, after one year of research and development invented a device of two coils with a closed iron core, with variable ratio induction, which they called a transformer, the name used ever since. This device was the basis of alternative current (AC) power distribution networks. Such a network was installed at the National General Exhibition in Budapest (May to November 1885) where the system worked faultlessly without interruption. During the following decades, the Ganz factory manufactured and installed several hundred power distribution systems using their own components. In 1886 they installed the Rome-Cerchi steam power plant, the first power plant built to supply a large city with electricity. This was the very first power plant which used, on the proposal of Bláthy, AC generators to supply a common network in parallel connection. The Ganz factory produced electrical equipment for the power network of the city of Rome over several decades.

Faraday may have discovered electromagnetic induction but much else was needed—backed by many patents—to turn this discovery into an industrially useful technology. In a 1964 memorial exhibition held at the Smithsonian Institute in Washington, what Hungarians had done for the transformator was duly acknowledged. It should also be mentioned that AC or DC was not a settled question from the start. Edison, who backed DC, was proved wrong, the young Hungarian engineers were right. The state of the art electric equipment they produced was admired by the trade all over the world. (*Western Electrician,* Chicago, May 25th, 1889.)

In 1889 the Ganz factory started to distribute the first induction watt-hour counters (AC power meters), which were based on a patent held by Titusz Ottó Bláthy. Today's household power meters are the modernized version of these counters. In Tivoli, near Rome, a hydroelectric power plant was built in 1892 by Ganz, which was the largest facility of its kind in Europe. A 5000 V overhead power line went all the way to Rome to transport electric energy, thus becoming the first system where high voltage AC generators supply power to a city network located at a distance. In the history of electricity this was the first system where generators driven by steam engines (Rome-Cerchi) and water turbines (Tivoli) operated in con-

junction. (This was made possible by a reliable automatic water turbine controller. Bláthy was one of those who contributed to its construction.)

Hungarians have been attending foreign universities as both students and teachers for several centuries. Records show that in 1192 Béla III sent students to Paris and that a Nicolas Hungarus studied in Oxford after 1194; Hungarian students studied at the universities of Bologna, Padua and universities in German, Dutch and French cities.

From the sixties of the nineteenth century many Hungarian students attended the Technische Hochschule at Zürich. In the eighteen-seventies approximately ten per cent of the students there were from Hungary, among them János Feketeházy and Vince Wartha.

János Feketeházy specialized in constructing steel structures and bridges. In 1878, at the World Exhibition in Paris he won an award for the structure of a new bridge over the river Danube. As the engineer of the Hungarian State Railways he designed and built the first revolving bridge (in Fiume) which could carry both rail and road traffic. In 1894–96 he designed the Ferenc József Bridge in Budapest (still standing today as the Liberty Bridge). According to the publication *Eisenbrückenbau* (Iron Bridge Construction) by Professor George Mehrtens of Dresden, this "was the most beautiful Gerber-type bridge in the world."

Vince Wartha, a chemist, succeeded in searching for new technologies in ceramics. He developed the metallic eosin glaze (1892), used ever since for eosin decorations in the Zsolnay Porcelain Factory at Pécs. The Zsolnay factory also manufactures colourful pyrogen-granite tiles, which were very popular in the Art Nouveau era. These tiles were used on the façades of public buildings in many towns in the old Austro-Hungarian Empire.

On 11 February 1893, Donát Bánki and János Csonka applied for a patent "New solutions for petroleum engines". One of their solutions described the carburettor, the first ever in the world.

A service called *Telefonhírmondó* (Telephone News) started operating in Budapest on 15 February 1893. This was the first service of its kind (it remained in operation for several decades), where a central switchboard supplied news and broadcasting to any number of subscribers, who listened with headphones. This News was the predecessor of today's radio broadcasting and it was initiated by Tivadar Puskás; Nándor Szmazsenka, a technical director of the telephone company, played a significant role in its practical implementation.

Béla Gerster participated in the international expedition that surveyed the Panama canal area. In 1893 he designed and directed the construction of the Corinth Canal. The Emperor Nero had wanted to build a canal on the very same site. The Romans started work on it but were unable to bring it to completion.

In 1898, Donát Bánki invented the high compression Bánki-engine with a dual-carburettor (for evaporating fuel and water). This engine won an award at the 1900 World Exhibition in Paris. Dual evaporation has been in use ever since.

In 1898, Loránd Eötvös, Professor of Physics at the University of Budapest, built two pieces of his torsion pendulum. One of them won an award at the 1900 World Exhibition in Paris, the other was used by Eötvös, who performed his classic experiment in the winter of 1901 and 1903 on the frozen surface of Lake Balaton. The torsion pendulum, known as the Eötvös-pendulum, was used to measure the force of gravity and became an important tool

in theoretical and practical research. The significance of the pendulum was all the greater because of its extraordinary accuracy, it was able to provide practical evidence for Einstein's theory of relativity. The inventor did not apply for a patent, thus making the device available to the scientific community. This gesture became really significant when Hungarian geologists developed a research tool in geophysics based on measuring gravity. The Eötvös-pendulum became useful in finding various natural resources, especially crude oil. In the twenties and thirties of the twentieth century, large oil companies successfully used this instrument (manufactured either in Hungary or in other countries) all over the world. Its improved version, the E-54 Eötvös-Rybár-Banai type torsion pendulum, won a Grand Prix at the 1958 World Exhibition in Brussels.

Kálmán Kandó, a young engineer in the Ganz factory, engaged in electrical and mechanical design, recognized during the last years of the nineteenth century the importance of electric power for the railways. He also suggested that alternative current should be used instead of direct current.

In September 1902 a 106 km section of the Valtellina railway, between Lecco and Sondrino in Italy was put into operation. This was the first high-voltage, AC powered electric railway system installed on a major railway line. The Ganz works in Budapest developed, manufactured and installed almost every major item of equipment for this line, including locomotives, transformer stations and power networks—all under the direction of Kálmán Kandó. It was so successful that the Italian government ordered the electrification of an additional 2000 km of railway lines using the very same system. Kandó was invited to direct the design and manufacturing of electric engines in a new plant at Vado Ligure. The first locomotive manufactured in this plant, the Cinquanta, was designed by Kandó and gained worldwide admiration. A total of 369 units were manufactured, and this type was so reliable that the last units were only withdrawn from service in the nineteen-sixties.

Kandó returned from Italy at the beginning of the First World War. His idea that electric railways must be supplied from the national grid was too advanced for its time. In order to be able to implement it he developed the converter system, for which practical tests were started in 1923. Following this development, the first regular service started on 12 September 1932, with the operation of the Budapest–Hegyeshalom line, which had been electrified on the basis of Kandó's design.

The year 1908 marked the first mass-produced motorcar, the Model T Ford, of which approximately 15 million were made. József Galamb, who emigrated from Makó in the south of Hungary to America, had a significant role in designing the Model T and in organizing the production line. In a survey conducted for the millennium, the Model T was named "Car of the Century". József Galamb also had a part in designing the Fordson tractor.

In the first decade of the twentieth century, Pál Járay was engaged in designing aircraft and in preparing drag-resistant shapes for them. The efficiency of Zeppelin airships significantly improved because of his work. After 1918, he continued to work in Berlin and built the largest wind-tunnel in the world. In 1920 he patented an aircraft shape which caused the smallest drag. He extended his research to vehicles and in October 1920 he applied for a patent on an ideal shape, his "aerodynamic body". In March 1921 he further improved his design and developed a body with the smallest possible drag. Several

car manufacturers used the Járay-shape in designing their new models.

Jenő Fejes started to design engines manufactured of plate-steel in 1916. In 1921 he submitted his first patent, which reduced engine weight by as much as 30 per cent. The first car thus manufactured appeared in the following year. Fejes submitted a total of 14 patents on plate-steel cars. In 1927 a car plant was established in London to manufacture the Fejes-car, but the Great Depression intervened and the venture collapsed.

Moving forward to 1953, the Ikarus Chassis and Motor Vehicle Plant released their first rear-engine bus, the Ikarus 55.

In Budapest in 1968, the Car Research Institute invented the combined turbo, an improvement on traditional turbo drive engines. This utilized gas resonances in the engine intake. Several major car manufacturers purchased and adopted this method.

In 1969, the Ikarus Series 200 bus was introduced, of which more than 230.000 were manufactured and exported to 46 countries. The Ikarus 200 won an elegance award in the luxury category in that same year, at a bus exhibition held in Nice. In 1971 a super deluxe Ikarus conference bus won the Prince of Monaco Prize at the same exhibition.

Béla Berényi retired in 1974. This car designer was probably the most productive inventor in his field, with approximately 2500 patents to his name. From 1939 to 1974 he worked for Daimler-Benz, heading the strategic planning department for a significant period. Several of his inventions were decades ahead of their time.

In 1980 Ferenc Anisits, who had an international reputation as a mechanical design engineer, was invited to direct the diesel engine development division of BMW, to be built in Steyr (Austria). He supervised several successful projects until his retirement in 1999. The 6 and 8 cylinder diesel engines developed under his supervision were regarded as the best engines of 1999 and 2000.

In 1907, Sándor Svachulay, a Budapest mechanic, started to build various versions of his Kolibri airplanes, using a revolutionary new method which became common later: a welded steel tube airframe, retractable wheels. The canvas covering was joined by seams rather than by nails and stretched after installation. He also introduced the nose wheel, the adjustable metal propeller and a device to reduce the plane's speed after landing.

As early as 1912, Aladár Zsélyi and Tibor Melczer (an assistant to Donát Bánki at the Technical University in Budapest) designed a passenger airplane to carry 30 people. It appeared in an article entitled "The problem of large airplanes".

In May 1928 and in 1932, the mechanical engineer Albert Fonó applied for a patent in Germany for a gas turbine jet engine. In the two separate applications the inventor described four versions of the engines, which were suitable for supersonic and subsonic flight.

The first trans-oceanic flight by a Hungarian took place on 16–17 July 1931. György Endresz, pilot, and Sándor Magyar, navigator, flew across the Atlantic in a Lockheed Sirius aircraft, "Justice for Hungary", from Harbour Grace (Newfoundland, Canada) to Hungary in 25 hours and 40 minutes. They set a new record: they covered more than 5000 km, longer than previous trans-Atlantic flights, and they flew faster than anyone else had done previously.

In 1936 a rocket research department was established in the Guggenheim laboratory of the University of Pasadena, California, which engaged in problems of supersonic flight. In 1944 this department became independent as the Jet Propulsion

Laboratory. At the end of the 1920s Tódor Kármán had set up the Guggenheim Laboratory at the university's request. He headed this institution from 1930, after leaving the aerodynamics department of the University at Aachen, at the time one of the leading aviation centres. The first National Medal of Science, the highest scientific award in the U.S. established in 1963, was presented by J.F. Kennedy to Tódor Kármán, born in Budapest, for his extraordinary achievements in aerodynamics, aviation and rocket technology. The U.S. Post Office issued a stamp with his portrait.

Mass production of pharmaceuticals started in Hungary in 1910. The industry, in cooperation with researchers in universities and other laboratories, was highly successful and developed more than 50 original Hungarian drugs for domestic and export markets. Many of them gained international acclaim, because of their effectiveness.

Significant achievements were made in medical instruments, too.

In 1907 Hümér Hüttl, a surgeon and university teacher in Budapest, invented a surgeon's sewing machine jointly with a mechanic, Viktor Fischer, which was patented in the following year. In 1920 Aladár Petz improved the instrument, which became famous all over the world.

In 1913, György Hevesy and Friedrich A. Paneth developed a method for using radioactive indicators in Vienna. The scientific and industrial application of isotopes has been based on this principle ever since—including medical applications. Hevesy won the 1943 Nobel Prize in Chemistry for this work.

The eye surgeon József Dallos developed a technology for manufacturing glass in 1934, which was suitable for making contact lenses that take into account individual asymmetries of the human eye. His improved lenses were patented in 1934. Dallos later settled and practiced in England.

In 1939, the eye surgeon István Györffy and an optician, János Pálvölgyi, manufactured the first unbreakable plastic contact lens in Budapest.

György Békésy, a physicist, won the 1961 Nobel Prize for his research into hearing. His comprehensive work on the subject was published in 1960.

In the 1980s Imre Juhász started to manufacture bone replacements in his plant at Hódmezővásárhely (Protetim Kft.). The products were based on several patented inventions, which were the result of significant medical and scientific research and product development.

In 1906 the Egyesült Izzó (United Incandescent and Electric Co.) of Újpest started to manufacture light bulbs with a wolfram filament, exploiting a (three years old) invention of the chemist Sándor Just and the engineer Ferenc Hanaman.

The patented large-crystal wolfram and the double spiral shape of the filament significantly improved the stability of filaments and the durability of light bulbs.

On 11 August 1930, Imre Bródy submitted a patent, "Gas filled light bulb with metal filament", which covered the principle of a light bulb filled with krypton gas.

In 1935, Egyesült Izzó was granted a patent for the mass production of inert gases, primarily krypton and xenon, from air. Imre Bródy played a significant part in preparing this technology, with the help of Mihály Polányi from England. The first krypton gas factory in the world using this method was established in 1937 at Ajka. This factory enabled the company to engage in the large-scale manufacturing of krypton filled, highly efficient light bulbs.

On 7 June 1916, Dénes Mihály, a mechanical engineer, managed to produce a

successful movie with a sound track. On 30 April 1918, he applied for a patent for a method called Projectophon for recording sound pictures. His method provided good quality sound tracks with 35 mm film stock using optical sound recording, and he can thus be regarded as the inventor of the sound film. His patent was published on 18 October 1922. He was also engaged in early experiments in television from the 1910s. He initially developed his inventions at the Telephone Factory in Budapest, before going to Berlin in 1924, to work for AEG. His first practical piece of equipment, the Telehor, was introduced in 1928. On 8 March 1929 the Berlin-Witzleben radio station transmitted the first live television broadcast in the world, using the system developed by Dénes Mihály.

An officer in the Fire Brigade, Kornél Szilvay, patented his dry extinguisher in 1923. This sprayed a powder (sodium bicarbonate) onto the fire with compressed inert gas. His equipment came on the market in 1925.

Kálmán Tihanyi, a physicist, applied for a patent on storing charges for improving the light sensitivity of television recording systems on 20 March, 1926. His transmission-receiver system was named the Radioscope. He described several practical solutions for the picture tube and for the recording device in his principal patent registered in Hungary, Germany, England, France and America. RCA purchased his patents, which were the basis of the iconoscope, developed later by Zworkyn and his associates at RCA. This device was manufactured from 1930 on for transmitting television programmes. Charge-storage has remained the basic principle of modern television. Tihanyi also developed a special, infrared-sensitive (night) television camera, which was patented for the control of airplanes and military vehicles in 1929. In 1939 he submitted a patent application in England for the flat TV tube.

Károly Péter Goldmark, an engineer born in Hungary, was a pioneer in the field of developing and applying electronic television tubes. From 1935 he worked for CBS in America, later becoming the head of the company's research laboratory. Finally he became a vice-president of CBS. He developed the first colour receiver suitable for general applications, which was introduced by CBS in August 1940. He was also involved in several medical applications of television, as well as in the practical use of television in space research (including the broadcast of the first moon walk). In 1948 he developed the first long playing (LP) disk.

György Jendrassik joined the Ganz company as a young engineer and eventually reached the position of general manager. He submitted a revolutionary Diesel-engine invention soon after joining the company. The golden age of Ganz was based on this family of engines, which were developed to cater for a wide range of applications, with more and more cylinders. The first, internationally renowned, Ganz-Jendrassik were produced in 1927. Eight foreign engine manufacturers purchased the rights to manufacture these engines.

György Jendrassik applied for two gas-turbine patents in 1929. The first low capacity (73 kW), highly efficient gas-turbine with an independent fire box was manufactured in 1938.

On 15 December 1934, the Árpád class of rail-bus made its inaugural journey to Vienna. This pride of the Hungarian railway industry was powered by a Ganz-Jendrassik engine. Ganz exported these vehicles to several countries.

In 1929, Jenő Hankóczy improved the farinometer he invented in 1905. The new device was suitable for classifying flour

and pasta. This farinograph was to be used internationally in flour milling.

In 1930 Ödön Riszdorfer (with his younger brother, László) invented the hand held, battery operated light meter. Following an agreement with Kodak, they started production of the device (in their workshop in Budapest) under the trade name Kodalux, later Superlux. He improved the device and developed an automatic shutter for movie cameras. His inventions, which were purchased and adopted by leading companies, revolutionized the photographic industry. More than 120 patents were registered under his name.

In 1930, István Juhász, a mechanical engineer, was granted a patent on an automatic fire director (the last of his three patents was dated 1939). The Gamma-Juhász automatic fire director (used by anti-aircraft gun batteries) was developed and manufactured in the Gamma Works (owned by the Juhász brothers). They exported the device to Sweden (a plant in Stockholm existed under Hungarian management), Switzerland, Italy, Holland, Norway, Finland, Poland, China, Persia and Argentine.

In 1931, Béla Gáspár, a chemist who worked in Germany, produced the first colour film made using the subtractive method. In 1934 he invented Gáspár-colour, which was based on colour distraction. The first non-fading colour film was manufactured on this principle. The Cibachrome film was developed on an idea patented by Gáspár, as well as films manufactured in England since 1935.

Jenő Dulovits and Miklós Tóth developed the DUTO type photographic front lens in 1932, in use all around the world and still being manufactured.

On 2 December 1933, the 120 kW transmitter of Hungarian Radio (which began broadcasting in 1927) at Lakihegy, 22 km from Budapest, started its operation All the equipment of this major transmitter, then the most modern facility of its kind in the world, was manufactured in Hungary. The 307 m high special aerial was made by MÁVAG, and was the tallest aerial of its time and remained the tallest structure in Europe for many years. The tower was damaged in the Second World War, but it was rebuilt to a height of 314 m. It is now a protected industrial monument.

A new product from Kodak, the Kodak Six-20 attracted special interest at the 1939 EXPO in New York, as this was the world's very first automatic camera. Patents registered by two Hungarians, Ödön Riszdorfer from Budapest and József Mihályi, employed by Kodak at Rochester since 1923, contributed to the manufacture of this camera. Mihályi became the chief designer at Kodak for approximately 30 years and held more than 200 patents.

In 1939 Andor Rott, a Hungarian chemist working for Gevaert in Belgium, applied for a patent for his direct positive photographic method (2 November, patent application in England). The DTR (the internationally accepted abbreviation for "Diffusion Transfer Reversal") method revolutionized photography. Gevaert started the distribution of the new photographic paper in 1940, under the trade name of Transargo. (A chemist working for Agfa, Edith Weyde, applied for a patent in 1941 for a similar method.) E.H. Land in America also based his Polaroid method, patented in 1944, on Rott's idea.

From 1940 on, the engineer István Menyhárt designed huge industrial halls in Hungary, made of reinforced concrete shells. The first buildings of this kind were at the Csepel Port and at the Kőbánya Brewery. The bus garage, built in 1941 at Hamzsabégi Street in Budapest, was the largest hall with a reinforced concrete shell spanning over 82 m. It was covered with elliptic paraboloid segments. This garage

has been in use ever since. An airplane hangar at Szolnok, a similar structure, also held the world record in its category.

On 2 December 1942, the first experimental nuclear reactor was installed in Chicago. Several famous scientists were involved in the project, but Enrico Fermi from Italy and Leó Szilárd from Hungary played the most significant roles. They applied for a patent on atomic reactors on 19 December 1944. The first patent for an atomic reactor was granted to these two scientists on 17 May 1955. The US Government then purchased this patent for the symbolic amount of one dollar.

József László Biró, a journalist and inventor who had emigrated to Argentine, obtained a patent on the ball point pen on 10 June 1943. Although there had been several attempts before, the first practical solution was found by Biró and Andor Goy, who participated in his experiments in Budapest.

In the 1940s Dénes Gábor, an electrical engineer who lived in England, conducted experiments in electron optics which resulted in his invention, holography. He developed the theory of optical holography and produced his first hologram in 1948. The invention of laser paved the way to the laser hologram. He received a Nobel Prize for his work in 1971.

John von Neumann (1903–1957) was a mathematician, chemist and the most significant theorist in electronic computing. He participated in the Manhattan project and in early computer development in the US. In 1945—when computer technology was only at an embryonic stage—he published his study "First Draft of a Report on the EDVAC" (30 June), which laid the foundations of computer science. In this study he summarized his ideas on research and development in this field, describing the construction, specification and logic of a digital computer with data storage. His idea survived, and all commercial computers marketed so far have been based on Neumann's original idea, differing only in technical details. He founded the theory of cellular automation. (His teacher in Budapest, Rudolf Ortvay, called his attention to the possible analogy between the neural system and the computer.) John von Neumann was a true genius, because he was able to recognize the future of a device which was only in its infancy. He made people aware that the computer was not only a more effective adding machine, but it was a fundamentally new device for data system management. He realized the computer's tremendous potential.

From the second half of the 1940s, high capacity (100 tons) floating cranes were built in the Ganz Shipyard for the reconstruction of bridges demolished during the war. They developed a wide range of floating and portal cranes with several original ideas. These cranes were highly successful on the international market.

Zoltán Bay, physicist and university teacher, and his associates conducted experiments with a radio locator (radar) in Újpest on 6 February 1946, at Egyesült Izzó, which they developed and manufactured in the same factory. They experimented with beams directed at the Moon and detected the reflection of these beams, only a few days later than American scientists who led the research in this field. Bay developed a new type of sensing method (in order to compensate for the low capacity of their transmitter), the signal adding method, which has been used ever since for receiving signals from a remote object with high noise level background.

From 1939 on, Mária Telkes (teaching at MIT) was involved in utilizing solar energy. She supervised these kinds of experiments from 1950. The first experimental house using solar heating was built under

her supervision in 1948 in Dover, New Hampshire, Massachussetts. Later she designed two more dwellings that harness solar energy. She obtained approximately 20 patents on utilizing solar energy (distillation equipment, desalination of seawater, heat storage, cold storage).

The chemist László Vissy invented a lining material suitable for high temperature melting furnaces in 1954. The Mosonmagyaróvári Timföldgyár has been manufacturing this material since 1958. The product, called corvisit, from corundum and the inventor's name, has been used all over the world in a wide range of applications (the steel and aluminum industries, glassworks).

From 1957 József Thoma, an engineer, developed the sliding-shuttering method for construction work, which was based on his inventions: an automatic, continuous concrete laying method suitable for the construction of high, tower like buildings with a variable cross-section. Several projects have since been built with this method in many countries.

From the end of the 1950s the National Optical Works (MOM—Magyar Optikai Művek) added laboratory instruments to its product range. They started the production of the derivatograph, a thermo-analytical instrument based on the patent of László Erdey, Ferenc Paulik and Jenő Paulik. Approximately 5000 units of various types of this instrument were manufactured and exported to more than 20 countries. They produced an ultra-centrifuge, based on the invention of Ferenc Rohonczi and Kálmán Nógrádi. This item, continually upgraded, was manufactured for over 30 years and exported all over the world. Ferenc Pusztai, the head constructor of geodesic equipment, received the Kossuth Prize (Hungary's highest state award for excellence) in 1963 for gyroscope theodolites based on his patent. These devices were used for civil and military purposes. Producing several thousand units of the gyro-theodolite, MOM was the largest supplier of this kind of equipment (for example, the GT-12 type was delivered to South Africa up to the beginning of the 1990s).

In 1975 Ernő Rubik constructed his Rubik's Cube, which was declared Toy of the Year in 1980.

In the 1970s Tibor Jeney (with his wife Edit Oborzil) invented the aluminum bell, tuned with slots. Today there are several bells of this type in Hungary and across the world. They have prepared the plans for a giant World Bell.

Several of the instruments carried on board of the Soviet VEGA spacecraft launched to study Halley's Comet in 1984 included devices made in Hungary, in the Central Physical Research Institute and at the Technical University: the microcomputer controlled TV system, the Plazmag spectrometer used for studying low energy particles, the Tünde-M analyzer for high energy ions, the central data storage device and several Earth-based controlling units. One European, two Soviet and two Japanese probes passed the comet between 6 and 14 March 1986.

At the beginning of the sixties, Emil Rudolf Kálmán, an engineer and mathematician, teaching in the USA, developed a filter named after him, which has been used in controlling space research devices ever since (the first in 1963, in the unmanned Moon probe). In 1985 he received the Kyoto Award (the first recipient of this very prestigious prize) for his work on complex systems.

In 1985, Sándor Tarics, an engineer, designed and installed the first special spring loaded foundation in the US, which provided protection against earthquakes. Tarics was a member of the gold medal Hungarian water polo team at the 1936

Olympic Games. He was a professor at the Technical University at Budapest and has since 1949 lived in the US. His design office, established in 1951, prepared the plans of more than 700 projects. Tarics is one of the most respected expert advisors on earthquake-safe buildings.

In 1981, Charles Simonyi joined the Microsoft company. He established and heads the research team engaged in developing microcomputer applications. With his collaboration and efforts, Microsoft launched several applications in the 1980s (Microsoft Multiplan, Word, Excel etc.).

János Harsányi, an economist, received a joint Nobel Prize for his work on game theory in October 1994, and György Oláh, a chemist, received the Nobel Prize in chemistry for his "contribution to the chemistry of the carbon cation".

On 1 November 1995, András Götzy applied for a patent for a giant, three dimension poster, which, although stationary, provides a sense of movement. (The date of the application for the international patent was 23 April 1997). At the time of application Götzy, then only 23 years old, won several awards and received a unique (international) acknowledgement for his work.

In 1995 Kürt Kft. of Budapest won the Hungarian Award for Innovation: the company's employees had developed a new method for recovering and restoring data from damaged hard disks. They have prepared a data saving technology that is unique.

On 12 December 1996, Zoltán Dárdai applied for a patent on "Delivering peptide-like products (especially insulin) into living organisms to be used for local delivery treatment". The colloid-chemical method of the inventor enables diabetics to obtain their regular insulin supply from a simple adhesive tape rather than a daily injection. Dárdai has been involved in new possibilities in the transdermal intake of medicines.

Tamás Székely as inventor, and TVK (the largest chemical company in Hungary), as the owner, applied for a patent, "Method for recycling mixed plastic waste", on 5 December 1997. The new material produced on the basis of this patent is an excellent bitumen additive, which increases the durability of roads by factors of ten by reducing frozen patches and grooving. On 18 July 2000, an experimental road with the new material, called Syntumen, was built at Szekszárd.

At the 1998 Junior Inventors World Championships (ages 14–21), Gábor Bernáth, a student from Budapest, won four first prizes and became the absolute winner. His device, a PC compatible three-dimension scanner, was capable of scanning three-dimensional objects, for example, human faces, in a few minutes (once a complex and protracted procedure). ❧

Árpád Szállási

The Medical Contribution

Medicine is international and its national features appear in how it is practiced. Alternative medicine and folk medicine are in a different category and should not be underestimated or overestimated, although a precise evaluation is difficult to make. The notion of medicine itself has gone through tremendous changes: Hippocratic experience and Galenic principles, systematized by Avicenna, dominated medical thought for centuries. University curricula from the foundation of the university of Salerno were based on this, and medical science in any modern sense dates from the 16th century.

When Saint Stephen, the first king of Hungary, was crowned in 1000, he invited religious orders to help in the Christianizing of his country, and these orders also contributed to healing. Since university education began to take shape in the Western Christian world only in the late 12th century, there were no trained physicians earlier. Monastic medicine in Hungary was predominantly Benedictine. Although Hungarian students of medicine begin to appear on the rolls of the universities of Bologna, Paris, Oxford and other institutions, their number was sufficient only to serve the principal towns—Buda, Esztergom, Fehérvár and Veszprém. Ordinary folk still relied on the shamans, or at best those priests who had some medical training. The several attempts from the 14th century on to establish universities (at Veszprém, Pécs, Pozsony [Bratislava] and Old-Buda) did not make for great changes.

Vesalius's *Fabrica* of 1543 replaced speculation and conjecture about the human body with accurate observation and established a new method in the history of medicine. At this time, the central regions of Hungary were occupied by the Turks. The occupation also put an end to the university of Pécs, founded in 1387. Although some parts of the country remained independent, none were able to keep up with the West in terms of higher education. The only way to receive any form of higher education was to travel abroad, supported either by wealthy aristocrats or by the cities of Upper Hungary and Transylvania. The other great sixteenth-century reformer of medical science, Paracelsus, visited Hungary, and Hungarians were to be found among both his opponents and supporters.

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The birthplace of modern medicine was Italy. Vesalius lectured at the university in Padua, where later William Harvey, who discovered the circulation of blood, studied. Modern medicine, nevertheless, needed the discovery of America, the invention of printing, and even the cultural inspiration of the Reformation. In occupied Hungary too, Islam showed a certain amount of tolerance towards the new Christian sects.

The list of famous Hungarian doctors starts with Johannes Sambucus (or by his Hungarian name: János Zsámboky, 1531–1584). His works on iconography won him an international reputation, and he also served as a diplomat, a doctor and even as a book collector for the Habsburg court. Paradoxically, the Emperor employed Hungarian doctors, whereas a couple of decades earlier the Jagellonian kings of Hungary—Ladislaus II, and Louis II—had an Italian physician, Giovanni Manardus (1462–1536). King Louis II, who lost his life at the battle of Mohács, had a court physician, born in Kassa (Košice), Johannes Antonius Cassoviensis (1496–1548), who had earlier been physician to Erasmus and later Sigismund I, King of Poland.

The Reformation brought with it the translation of the Bible into the vernacular and also medical books and herbaria. Apparently, the *Herbarium* (1578) of Péter Melius Juhász, the Calvinist bishop of Debrecen, came out earlier than even the first complete translation of the Bible. One of Melius's contemporaries, Gergely Frankovits from Sopron, whose family originated in Slavonia, published an important medical tract in Hungarian: *Hasznos és fölötte szükséges könyv* (A Useful and Most Important Book) in 1588. Yet another botanical work in Hungarian was Lukács Pécsi's *Keresztény Szüzeknek tisztességes koszorúja* in 1541 (A Respectable Chaplet of the Christian Virgin), which was the first illustrated Hungarian botanical tract. Carolus Clusius (1526–1587) of the Netherlands, who was perhaps the greatest botanist of his age, worked in Hungary for a while.

In the first half of the 17th century Dávid János Ruland (1585–1648) stood for iatrochemistry in Hungary. Máté Csanaki (1595–1626) of Sárospatak demonstrated the parasitic nature of scabies. Keresztély Augustini (1598–1650) of Késmárk began to produce his *Balsamum Carpatinum,* a medicine which was used world-wide for two hundred and seventy years.

The chief figure of the Hungarian Counter-Reformation, Archbishop Cardinal Péter Pázmány, established the University at Nagyszombat in 1635, modelled on the university of Graz, with a strong bias for philosophy. The university lacked a medical faculty until as late as 1769, but its influence on morals was enormous, even with its Counter-Reformation intentions.

The 17th century was the golden age of Protestant universities. Calvinist students from Transylvania were to be found in Switzerland and the United Provinces, the Germans from the cities of Upper Hungary or the Saxons of Transylvania enrolled in the Lutheran colleges in Germany. Their paths crossed each other, and often converged in England. The United Provinces had the greatest number of students from Hungary, mainly due to a generous system of scholarships, and the number and quality of colleges and printing houses. It was in Utrecht, home of Leuwenhoek, Schwammerdam and Reiner de Graaf, where the first comprehensive Hungarian treatise on medicine was published in 1655. This was János Apáczai Csere's *Magyar Encyclopœdia*. Many Hungarian doctors became members of the German Society for Natural Science *(Societas Naturae Curiosorum).*

In 1656 a *Praxis criminalis* was introduced in the Habsburg lands, which contained rules against abortion and infanti-

cide as well as the practice of forensic examiners' depositions and compulsory autopsies for those who had died violent deaths. Various epidemics decimated a country that was already under-populated as a consequence of the Turkish wars. At this time there appeared an important book by Farkas Hoefer of Győr which described the endemic nature of goitre. All these developments show that despite lacking a medical faculty, Hungary was not isolated from the mainstream. An interesting comparison emerges if one contrasts the diaries of the Turkish voyager Evlia Celebi with that of the Englishman Edward Brown. Both travellers conclude that it was the unfavourable geopolitical situation and not the lack of human initiative that was responsible for the misery of the country.

Ferenc Pápai Páriz, who published the first Hungarian medical tract, the *Pax corporis* (Kolozsvár, 1690) brought his Cartesian ideas from Holland. He also published a huge trilingual, Latin-Hungarian-German Dictionary (which ran to 7 editions) and essays on theology. His efforts to have the College at Nagyenyed rebuilt, which was burnt down in a revolt against the Habsburg king, proved to be crucial.

The liberation of Buda from the Turks (1686), and the end of Turkish rule in the country posed serious challenges to the health services of a weakened country. The Royal Chancellor, Cardinal Leopold Kollonits, issued the *Ordo pestis* to counter epidemics. In the year of 1694, when the University of Halle was founded, in Hungary a translation of the most popular of medieval health regulations, the *Regimen sanitatis salernitatum* was published, translated by György Fel-Vinczi. Whereas the 18th century was marked in the West by the establishing of more universities, in Hungary another rebellion took place. During the war of independence, led by Prince Ferenc II Rákóczi, Boerhaave was already lecturing at Leiden. England took over the lead in clinical medicine (Sydenham, Glisson, Willis) and the great century of literature and arts started in France, with the Enlightenment inducing rapid development in the natural sciences. Hungary tried to follow all these enterprises. Although during the first half of the 18th century there was still no medical faculty, Ottó Károly Moller, called the Hungarian Hippocrates, established an academy to help students prepare for enrollment in foreign universities.

János Ádám Raymann, head physician of the town of Eperjes, published his technique for smallpox vaccination in 1717, well before Lady Montague communicated what she discovered in Constantinople about the possibility. The foundation of the *Consilium Regium Locumtenentiale* in 1723 was important for Hungarian health regulation. In 1745, the *Taxa Posoniensis,* a new tax system and professional instruction for surgeons was launched, and these were soon nationally observed. In the same year, the examination of midwives by medical officers was introduced. In 1752 an imperial decree ordered the employment of county physicians to provide medical care for the poor. However, while in Britain Fothergill studied the pathology of scarlet fever, Heberden published on *angina pectoris,* and John Hunter carried out a self-experiment to differentiate between syphilis and gonorrhea, Hungary produced no serious medical discovery. There was, nevertheless, a notable development beneath the surface: the supervision of health and medical services in all the Habsburg Empire were substantially reorganized by one of Boerhaave's outstanding pupils, Gerard van Swieten.

István Weszprémi (1723–1799), probably one of the best known Hungarian physicians of this period, travelled via Switzerland and Holland to England and worked alongside Smellie, receiving his diploma in

obstetrics. In his *Tentamen de inoculanda peste* (London, 1755) he suggested inoculation against the plague, which only became feasible more than a century later. On his return, he settled in the Protestant stronghold of Debrecen, became chief physician of the city and published his *Bábamesterségre tanító könyv* (Book of Instructions on Midwifery, Debrecen, 1766), the first such book in the Hungarian language. He is best known, however, for his magisterial four-volume *Succinta medicorum Hungariae et Transsylvaniae Biographia,* the most reliable biographical reference. The year 1776 was also marked by the publication in Kolozsvár of István Mátyus Kibédi's *Diaetetics,* which, with Péter Bod's *Magyar Athénás* (Hungarian Athene), indicated that Hungarian science was flourishing. The most important development in the second half of the century, however, was the establishment of a medical faculty at Nagyszombat by Maria Theresa in 1770, and the enactment of the first comprehensive hygienic codex, the *Generale normativum in re sanitates* (General rule of health issues). Publishing flourished. József Csapó, chief physician of Debrecen, brough out his *Kisgyermekek isputálja,* a manual of paediatrics, in 1771.

The university soon acquired better accommodation when Jesuit buildings were acquired after the order was dissolved in 1773. It was indeed a profound improvement in 1777, when Maria Theresa moved the university from Nagyszombat to Buda. The insufficient number of patients and the lack even of a botanical garden in the former location had been an obstacle for the proper progress of the institution. In 1784 Joseph II moved the university from Buda across the river to the more populous city of Pest. Although the language of tuition remained Latin (which was also the official language of the country up to 1844), Sámuel Rácz (1744–1807) was already lecturing in Hungarian to surgeons, and published his books in Hungarian. At the other end of the country, in the Transylvanian city of Kolozsvár a new surgical Lyceum was founded in 1775. Yet another centre of Hungarian medicine was Debrecen. This is the city where István Weszprémi lived, and various medical works were published. József Csapó, beside producing his tracts on pediatrics also brought out a book on botany, *Új füves és virágos kert* (New Garden of Herbs and Flowers, Pozsony, 1775), which, however, did not use Linné's taxonomy. István Hatvani, the "Hungarian Faust", who lectured at the College of Debrecen, analysed the waters of Várad (*Therma varadienis,* Vienna 1777), and through statistical scrutiny proved the impact of meteorological changes on infant mortality. Samuel Benkő, chief physician of the county of Borsod, published his *Topographia oppidi Miskolcz historico-medica* (Kassa, 1782), the first medical topography published either in Austria or Hungary. József Jakab Plenck, a surgeon and obstetrician, a devoted follower of Linné's classification, elaborated the taxonomy of 14 main groups for skin complaints in his *Doctrina de morbi cutaneis* (Vienna 1776). The first Hungarian book on balneology, *A magyarországi orvosvizekről* (On Hungarian Medicinal Waters) was published in Nagykároly by János La Langue, chief physician of Várad (Oradea).

The turn of the century was marked by opening the still functioning Rochus Hospital (1798) of Pest, and the Hungarian translation of Edward Jenner's book on vaccination in 1802. Compulsory smallpox vaccination was introduced in Austria in 1799, in Transylvania in 1801, and—due to the efforts of Ferenc Bene—in Hungary in 1802. Early in the 19th century French clinicians initiated percussion in diagnostics, and Laennec invented the stethoscope. Modern physical diagnosis was about to be

born. Morgagni's ideas on pathology were introduced in Vienna by Karl Rokitansky and the technique of auscultation and percussion by Joseph Skoda. Rokitansky, Skoda and Hebra were the three main figures of the second great medical school of Vienna. In Pest-Buda (i.e. the separate cities of Buda and Pest) Ferenc Bene presented earlier medical usage in his five volume *Elementa medicinæ practicae* (Pest, 1833), which was used as a university textbook even in Moscow. Ignác Mihály Lenhossék, previously chief physician of Esztergom, lectured on physiology at Vienna, and on returning to Hungary took up his new post as national medical officer *(protomedicus Hungariæ).* He was one of the doctors of the great reformist and modernizing statesman of the age, Count István Széchenyi. The first great generation of Hungarian doctors of the 19th century was trained in Vienna. Most notably János Balassa (1814–1868), who studied surgery under the great Wattmann, and who was appointed to the chair of surgery at the University of Pest at the early age of 27. Balassa rapidly became the central figure in Pest medical circles and remained their highly esteemed leader until his death. He was the first to apply narcotic anaesthetization, and raised plastic surgery to a formerly inexperienced level. Physical diagnostics was employed by Ignác Sauer (1801–1863). All of them played important roles in the revolution of 1848/49.

The most famous member of the Pest medical school at the time was, undoubtedly, Ignác Fülöp Semmelweis. Although his discovery was made in Vienna (1847), he published it while he held the chair of obstetrics at Pest, first in Hungarian and then in German. Semmelweis contrasted the statistical figures of maternal mortality caused by puerperal fever of two separate wards of the Allgemeines Krankenhaus in Vienna. His first publication on the aetiology of childbed fever appeared in Hungarian in the Medical Weekly. His main communication on the subject was written in German (1861). His discoveries related to childbed fever is well known. He compared the diverse circumstances women in labour were in the separate wards: in one they were attended by midwifes, in the other by medical students who also performed autopsies. Finally he concluded that it was the "corrupted animal matter" on the hands of the medical staff which caused the illness. His prevention was simple but thoroughly effective. He instructed his staff to wash their hands using chlorinated lime and by doing so remove the "corrupted matter" off their hands. The tragedy of his life and death is well known.

The main innovator in pediatrics and orthopaedics in Hungary was Ágost Schoepf-Merei (1804–1858). He was the first to apply laryngotomy in cases of child laryngeal-diptheria. He also founded a hospital for small children in Pest and published a textbook, *Gyermekgyógyászat,* (Pediatrics, Buda, 1847). After the failure of the revolution and War of Independence of 1848–49, he fled to England, and founded another pediatric hospital, in Manchester. His work in pediatrics in Pest was carried on by János Bókay senior (1822–1884). Another seminal figure of the first Pest medical school was Baron Frigyes Korányi (1828– 1913) who amplified traditional physical diagnosis by the use of laboratory examinations.

One of the first major ophthalmologists in Hungary was Teofil János Fabini (1791–1847), whose *Doctrina de morbis oculorum* (Teaching About Eye Diseases) ran into many editions, even a reprint in 2000. The importance of the subject was indicated when an independent chair of opthalmology was set up in 1817.

The most valuable development towards intensive medical discourse was the launching of a medical weekly, *Orvosi Hetilap,* by

Lajos Markusovszky in 1857, a journal that has been in circulation ever since.

The first Hungarian anatomist with a wide international reputation was József Lenhossék (1818–1889). Lajos Arányi, who had studied with Rokitansky in Vienna, organized the Institute of Pathology, and published the first university textbook on the subject. The key role in establishing the physiological school in Hungary was played by the Bohemian János Czermak, who was also one of the inventors of laryngoscopy. Between 1858–60 he gathered a promising young staff around himself. When the language of tuition changed from Latin and German to Hungarian, he was, unfortunately, dismissed.

His successor was Jenő Jendrassik, whose best student was probably Kálmán Balogh who, between 1871–83, was the professor of general pathology and from 1871 until his death in 1888, held the chair of pharmacology. He was the author of the first up-to-date Hungarian university textbook on physiology, *Az ember élettana,* (Human Physiology, Pest, 1862–64) and the *Általános kór- és kórjelzéstan* (General Pathology and Pathognomonics, Pest, 1865). He also edited a useful medical dictionary (1883). He became a primary contributor to the medical weekly *Orvosi Hetilap,* and was one of the links between the older generation and the members of the second Pest medical school. One of his students was Endre Hőgyes (1847–1906), who was among the firsts ones to publish on the reflex arc of sense equilibrium and on associated eye movements. Hőgyes was also the first director of the Pasteur Institute in Pest, and perfected antirabies inoculation. Balogh's other famous student was József Fodor (1843–1901), professor of public health, who discovered the antibacterial nature of blood, and achieved an international reputation in his subject.

During the last third of the 19th century the institutional network of medical care expanded. In 1881 the Second University Clinic of Gynaecology was opened, directed by the young Vilmos Tauffer (1851–1934). He initiated modern operative gynaecology in Hungary, and also developed the concept of modern obstetric regulation.

Although Ferenc Schwartzer (1818–1889) had established his private mental hospital in 1850, psychopathology and psychiatry were incorporated into the university curriculum only in 1882, under the auspices of Károly Laufenauer. Among his successors were Ernő Emil Moravcsik and Károly Schaffer. The latter was an international expert on congenital neurological diseases. His students included Dezső Miskolczy, Kálmán Sántha and István Környey.

The Academy of Surgery in Kolozsvár was raised to university status in 1872, and it was decided in 1912 to set up universities in Debrecen and Pozsony. Tuition at the newly founded universities started only after the Peace Treaty of Trianon of 1920, which reduced the territory of the country to one third of its former extent. Therefore both new universities were moved within the new borders. The Ferenc József University of Kolozsvár was transferred to Szeged, and the Erzsébet University of Pozsony to Pécs, where they still exist, albeit under different names.

An Act of Parliament in 1876 reorganized public health. Two years earlier, in 1874, a Chair in Public Health was established in Budapest (apparently the second in Europe) which took part in designing new urban water and sewer systems and in drafting the regulation of funerals. The chair, held by József Fodor, also introduced hygiene as a subject at all levels of schooling, and set up post-graduate courses for physicians.

Fodor also launched a journal devoted to the subject, *Egészség* (Health) in 1887.

Other medical journals of the period included *Gyógyászat* (Healing), *Magyar Orvosi Archivum* (Hungarian Medical Archive) and *Orvosképzés* (Medical Instruction).

Many societies were founded, among others the Hungarian Society of Gynaecologists in 1886, and the Hungarian Surgeons' Society in 1906. *Orvosi Hetilap* had regular supplementary issues on ophtamology, gynaecology and military medicine, which later became independent journals. A mark of the esteem Hungarian medicine was held in is that the 8th International Congress of Public Health and Demography met in Budapest in 1894. At this Congress Baron Frigyes Korányi proclaimed the establishment of a national tuberculosis sanatorium. In 1909 the 16th International Medical Congress assembled in Budapest; its proceedings filled 21 huge volumes. In that same year a statue of Semmelweis was erected, and obstetricians from all over the world paid their respects to the great Hungarian doctor.

The 19th century is usually depicted as the century of surgery. The names of János Balassa and Sándor Lumniczer should be mentioned. By the end of the century József Kovács (1869–97) and Gyula Dollinger (1897–1919) were the most outstanding surgeons in Hungary. In Budapest the Second Surgical Clinic of the Medical School was founded in 1880, and the Third in 1914. There were many brilliant surgeons who could not get a university chair. The most eminent was, perhaps, Hümér Hültl, who invented the first machine for gastrography. The apparatus was later developed by Aladár Petz. Among others were Jenő Pólya, who modified Billroth's technique of gastrectomy, and the gifted Arnold Winternitz. The list of legendary professors include Tibor Verebély, Lajos Bakay, Lajos Ádám in Budapest, and Tivadar Hültl of Debrecen.

A famous physician of the period was Sándor Korányi, son of Baron Frigyes Korányi, an internationally admired renal pathologist who carried out urine gravimetry by measuring the drop in the freezing point. This was taken over by several of his students (Géza Heténi, István Rusznyák, Imre Haynal and Imre Magyar) who transmitted it to the present generations. Ernő Jendrassik is primarily known as a neurologist—a technique has been named after him—and geneticist. Radiology became part of diagnostics and treatment. The first outstanding Hungarian radiologist was Béla Alexander (1857–1916) who died as a result of his devotion to his work. He carried out significant research on osteogenesis. His successor was Béla Kelen, whose measuring of radiation dosages was very valuable. Kelen also published the first university textbook on radiology. Debrecen set up a chair (held by Gyula Elischer) in radiology before the University of Budapest.

Within surgery, urology produced especially substantial developments after 1920. Géza Illyés (1870–1951) raised both diagnosis and operative surgery to such a standard that his *Surgical Urology,* in two volumes, was published by Constable in London.

Opthalmology was considered to be a minor profession, but it produced great practitioners: Vilmos Schuler and his pupils. Emil Grósz (1865–1941), the founder of a famous opthalmologist dynasty, contributed much to organizing mass screening for trachoma. László Blaskovics (1868–1938) was famous for his operations for strabismus and blepharotomy. Aladár Kettesy contributed to optics and operative methods.

Otology became a separate branch as early as the 19th century, with the first chair set up in 1902, held first by Gyula Böke (1832–1918). A major name in otorhino-laryngology was Adolf Ónodi (1857–1919), whose publications on laryngeal in-

nervation and the morphogenesis of the paranasal sinuses are still of value.

Dermato-venerology has long been established in Hungary. Ernő Schwimmer directed the university clinic in Budapest between 1892–97, succeeded by Lajos Nékám 1910–38. His three volume *Corpus Iconorum Morborum Cutaneorum* (Budapest, 1938) is an unrivalled collection.

Of the Hungarian physicians who worked at the University of Vienna the most famous were Mór Kaposi, Károly Sigmund and Ádám Politzer. The latter's pupil was another Hungarian, Róbert Bárány, a Nobel Prize laureate.

The first great Hungarian professor of surgical dentistry was József Árkövy (1851–1920), who was an expert on the pathology and diagnostics of diseases of the mouth. At the Pediatric Clinic of Budapest János Bókay jr. (1858-1937) proved the pathological correlation between chickenpox and herpes zoster. He had many outstanding students. Pál Heim (1875–1929) studied nutritional disturbances in infants. Ödön Kerpel-Fronius (1906–1984) researched toxicosis, and the electrolyte and water household. At Debrecen Félix Szontágh (1859–1929) was an expert on dyptheria, and László Kulin (1901–1989) on atrophy.

During the inter-war period the stronghold of theoretical medicine was Szeged, largely because of the group of excellent physicians who had come over from Kolozsvár. Among them was the famous István Apáthy (1863–1922) who argued for the continuity principle in the discussion on the nature of neurons. Among his opponents were the Spanish Nobel Prize laureate Ramon y Cajal, and the Hungarian Mihály Lenhossék (who was the uncle of Albert Szent-Györgyi, a later Nobel laureate). Both of them criticized the theory of continual nerve conduction of neurons, and put forward a theory of contiguous contact of neurons. It was proved that the neuron is an anatomical, functional and pathological entity, which was later further confirmed by János Szentágothai, who also belonged to the Lenhossék school.

In pathology there are figures such as Gusztáv Scheuthauer (1832–1894) who introduced histopathology into Hungary, and Ödön Krompecher (1870–1926), who discovered basal-cell carcinoma, which is named after him. Another famous pathologist was József Baló (1895–1979), who observed the concentric sclerosis of the brain.

The most important individual to follow Kálmán Balogh in pharmacology was Árpád Bókay (1856–1919), who was most eminent in toxicology. Gyula Magyari-Kossa, the distinguished historian of medicine, was also a toxicologist. Zoltán Vámossy (1868–1953) discovered the purgative effect of phenolphtalein.

It is noteworthy that before the First World War many outstanding members of the Budapest medical school started their careers in the Transylvanian city of Kolozsvár. József Lenhossék, Endre Hőgyes, Árpád Bókay, Nándor Klug and Balázs Kenyeres, to mention but the most prominent, were appointed to their first posts there, and their achievements brought them a summons to Budapest.

Here follow the names of some, however, who remained in Kolozsvár. Zsigmond Purjesz Jr. (1846–1918), who published the first Hungarian university textbook on internal medicine (1885). The neurologist Károly Lechner (1850–1922), who was a pioneer in the research on reflex movements, also worked there, and so did Miklós Jancsó Sen. (1868–1930), whose research work on malaria and the role of the anopheles mosquito were outstanding. Jancsó later moved to Szeged when the university was transferred.

Paradoxically, whereas pre-war Hungary had only two universities, the severely truncated post-Trianon country had four

medical faculties (Budapest, Debrecen, Szeged and Pécs). The developments in medicine and public health made this necessary, but the poor economic conditions created difficulties at the outset. Luckily enough, there were sensible politicians, most notably Count Kunó Klebelsberg, Minister of Public Education and Culture, and Béla Johan, Secretary of Public Health in the Ministry of Home Affairs, who realized the importance of education and were able to resolve an almost insoluble situation.

With the help of the Rockefeller Foundation, the first National Institute for Public Health was opened in Budapest in 1927. The Institute soon became a major centre for research. Professor Béla Johan not only directed the Institute, but also organized a network of ambulance stations, of T.B. dispensaries, control stations for venereal diseases, and a system (called the Green Cross) of home nursing for the poor in the countryside.

The universities transferred from the parts of the old kingdom of Hungary were strongly supported by Count Klebelsberg. The Universities of Szeged, Debrecen and Pécs soon became dynamic and forceful centres of education and research. Szeged was also strong in pharmacology, under Zsigmond Jakabházy and Béla Issekutz. Later on both of them moved to the capital, but the golden age in pharmacology at Szeged was under Issekutz. While he was the Rector of the University and on his recommandation, the promising young Albert Szent-Györgyi was called home from Cambridge. A modern institute of biochemistry was established for him. Szent-Györgyi received a Nobel Prize in 1937 for his research into biological oxidation, and for showing that paprika was an excellent source of ascorbic acid, vitamin c, that is. Miklós Jancsó Jr. was a pupil of Issekutz and later his successor. Jancsó demonstrated arsenobensol by histochemical analysis, and made important discoveries on the storage capacity and size of the reticuloendothelial system, and on the effects of capsaicin. He also created antimalaria drugs as well.

Debrecen started from a less advanced level, but soon produced a distinguished group of physicians. Frigyes Verzár (1886–1979), professor of physiology and pathology, first carried out blood grouping in Hungary. He brought in from Holland the first ECG equipment for electric-physiological research. He organized the Biological Research Centre in Tihany at Lake Balaton in 1929. In 1930 he was invited to head the Physiological Institute at Basel, but he also taught at the Institute at Tihany till 1938. Endre Jeney (1891–1970) was among the first to point to the haemotopoietic effect of liver extracts (Minot and Murphy were later honoured by a Nobel Prize for this). He described peritoneal dialysis, and drew attention to environmental issues in an age when they were not commonly known. Among clinicians the ophtalmologist Aladár Kettesy, the internist Béla Fornet (1890-1966), and above all the brain surgeon Kálmán Sántha (1903–1956) should be mentioned.

Last, but not least, a few words about the Erzsébet (now Janus Pannonius) University at Pécs. Its original staff all were from Pozsony, but the golden age came only after 1945. Previously, the pharmacologist Géza Mansfeld (1882–1950) studied there the physiology of the thyroid, and he was among the many teachers of the Nobel Prize winner Albert Szent-Györgyi. The prime time of Pécs in medicine, however, started when János Szentágothai held the chair of anatomy, Kálmán Lissák, that of physiology, Szilárd Donhoffer that of pathophysiology, and György Romhányi that of pathology. The practice of medicine was brought to a high standard by the paediatrist Ödön Kerpel-Fronius, the neurologist and psychiatrist István Környey and the dermato-venero-logist Miklós Melczer. ❧

János Estók

Developing Cereals

Around the year 1900, agriculture had an enormous role in Hungary's economy. It accounted for an overwhelming proportion of exports: 26 per cent of the world's wheat exports and 23.7 per cent of the flour export, with only the United States exporting more wheat than Hungary. Favourable environmental conditions, extremely good results in plant improvement, original wheat and flour testing methods and unique, state of the art milling technology all contributed to this exceptional performance.

At the end of the nineteenth century a very high gluten level strain, called Tiszavidéki ("from the Tisza region") was the most widely produced variety, grown mostly in the southeastern part of the old kingdom of Hungary, in the less populated areas of the Bácska and the Bánát. To a large degree, this variety was responsible for the country's outstanding figures for exports of wheat and flour. The black rust epidemic in 1860–70 prompted researchers to breed more resistant varieties. Sámuel Mokry (1832–1909) devoted his life to improving varieties of wheat native to the Carpathian Basin. Mokry-wheat was the result of special selection, with a longer and higher yielding ear and larger seed. It resisted draught and produced high-quality straw.

By the first decades of the twentieth century wheat genetics in Hungary achieved significant international success. The most acclaimed autumn wheat sorts, such as Bánkúti 1201, Bánkúti 1205, Fleischmann 481, were all established during this period. Three geneticists with exceptionally high levels of expertise played a key role.

Elemér Székács (1870–1938) bred rust-resistant species, based on the Tiszavidéki variety, which were used all over the Great Plain. Székács, who was the master of specific selection seed improvement, was only known by his nickname: "the wheat ear hunter". Rudolf Fleischmann (1879–1950) developed a world-class autumn wheat variety, F-481, which was called "sziki wheat", because it produced good yield on alkaline soils *(szik)*. Fleischmann was the first in the

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world to succeed in crossbreeding wheat with wheat-grass. In 1933 the Bánkúti 1201 variety was declared "Best Autumn Wheat" at the World Wheat Exhibition in Regina, Canada. The breeder of this excellent quality wheat was a modest man, László Baross, who did not name the variety after himself. This variety was appreciated around the world.

Baross (1865–1938) studied at the Academy of Agriculture, entering the employment of Archduke Joseph of the Habsburg family. He became animal stock supervisor at the Bánkút estate, in the county of Arad (now in Romania), where he engaged himself in growing of seed for wheat, maize, sugarbeet and other plants. After the First World War, this part of the country was assigned to Romania. Hungarian wheat producers were forced to compete with extremely high quality American wheat, forcing researchers to improve Hungarian wheat varieties.

Jenő Hankóczy (1879–1939) developed new instruments at the National Plant Experiment Station at Magyaróvár and at the National Wheat and Flour Experimental Station in Budapest, which were suitable for exact measurement of flour quality milled from various wheats. Hankóczy's new instrument, the farinometer, developed in 1905, determined the quality of flour (and baked products) washing out gluten, the protein component of the flour. The Hankóczy-type farinograph, an improved version of which was released in 1929, registered the water-absorbing capacity of flour. This instrument was capable of indicating the difference between the quality of various types of wheat. A German engineer, C.W. Brabender, participated in the development of this instrument, which was used in the bakery industry all over the world.

At the beginning of the twentieth century the so called Marquis wheat became very successful and was grown in large areas all over Canada. László Baross improved this variety with making it frost resistant, hence suitable for sowing in the autumn. He crossed the Marquis wheat with Bánkúti-5, which was a selected, early maturing variety of Tiszavidéki. As a result of this process the early maturing autumn varieties of the Bánkúti wheat won international appreciation with their high yield, high gluten content and rust resistance. The best known Bánkúti variety, the 1201, won an award at the World Wheat Exhibition in Canada. In the year 2000, associates of the Agricultural Research Institute of the Hungarian Academy of Sciences at Martonvásár separated the unique gene of László Baross's Bánkúti 2001 by employing gene technology and molecular biology methods. This was the gene that carried the excellent qualities of this specific variety of wheat.

The success of the high gluten-content Hungarian wheat (called "steely") was backed by the food processing industry, which was at the forefront of advanced technology. This technology included mills using world-class machinery and flour/wheat testing methods and instruments. Hungarian flour mills produced better quality and more variety flours than foreign mills, using traditional Hungarian milling techniques—they milled wheat after careful separation and classification based on quality. This achievement is illustrated by the fact that in Hungary mills produced 12-20 kinds of flour, in contrary to the 4-8 kinds of flour in foreign mills. Later, between the two World Wars, a new milling technique, the so called half-charge milling was introduced as a result of changing customer habits. This method required less machinery, simplified technology and produced a more modest variety of flours.

Imre Pekár (1838–1923), a mechanical engineer, patented his method which was

still the fastest and simplest method available for determining flour quality. The process is simple: a small quantity of flour to be tested is placed on a wooden tablet and flattened with a special tool. The difference in colour—enhanced under water—clearly indicates the purity of the flour and bran content. The name of this flour-testing method, the Pekár-test, became firmly established in several languages, as "pekaring".

Thanks to innovations such as the Mechwart-type steel mill-roller and the Haggenmacher-type flat-bed sieve, the Hungarian flour milling industry and the quality of milling led the word for a certain period of time. In the factory of Ábrahám Ganz, an engineer moved to Hungary from Switzerland, hard-casting was employed not only for manufacturing railway wheels but for milling rollers as well. An engineer born in Bavaria, András Mechwart (1834–1907), the technical director of the Ganz factory, developed his famous invention, a flour mill with steel rollers. This machine revolutionized flour milling all over the world. His patented invention was preceded by mills employing porcelain rollers operated with gravity pressure, an invention of the Swiss engineer Friedrich Wegmann. The Wegmann-mill was unsuitable for chopping or milling wheat, only for yielding coarse meal. Mechwart introduced steel rollers to the milling process and developed springs and rings for holding the rollers. This small, more effective and smoother mill squeezed the traditional, many thousand years old mill stones out of business. Century old millstones were replaced by steel rollers and now milled finer, higher quality flour. With this type of milling the shell of the wheat is less broken since the surface between the pair of rollers is small, thus bran can be separated easily from the rest of the flour. Plain and roughened rollers were installed in various kinds of Mechwart-type mills. The method developed by András Mechwart became known as "Hungarian milling".

A miller, Károly Haggenmacher (1835–1921), originally from Switzerland, became a famous beer brewer. In the eighties he developed a new type of sieve, the so called flat-bed sieve, which in contrast to earlier box and cylindrical sieves, significantly improved flour separation and yield. Separation too was gradually improved by installing more and more sieving and extracting frames into the boxes.

Around the year 1900, the output of flour mills in Budapest exceeded 1 million tons per annum. At the time Budapest was the centre of the world's milling industry, later overtaken by Minneapolis in the USA. ❧

András Gerevich

Poems

Translated by George Szirtes

Anglers on the Bodrog

Horgászok a Bodrogon

You're peeling potatoes by the Bodrog
while I chop wood into a pile,
you lark and chatter on,
the axehead ticks like a clock.

Tits and finches are chirruping
in the thicket. We sit ourselves down
like happy anglers. I want to squeeze
the warm avian body, feel its flutterings.

Like a fish struggling at the end
of a taut extended line
you refuse to surrender
nor will my arms let you go.

We fall upon each other, my mouth
fills with sand, the fire goes out.
I bite upon your nipple as a fish
might seize on a worm.

András Gerevich

is 25, was born in Budapest but spent four years in Dublin as a child. His second volume of poems is due out later this year. He is about to study in the US on a Fulbright scholarship.

Meal

Az ebéd

The shutter mechanism broken
our shared room was left in darkness
cutting us off from the town.
I'd gone for a smoke on the balcony.

It was light there. You in the kitchen cooking,
the flat saturated with the thick smell of food,
the constant sound of the radio. No good sitting down,
the blank sheets were still blank and plates

had taken their place on the table.
I put on some clothes for dinner and folded
the serviettes. The food was great, really great,
but you needn't have talked about it all the time,

pity about the shutters, it bothered me too
having to eat in summer by lamplight.
Stop fussing with the shutters. Can't you see
they're broken. I kiss your neck.

In the afternoon you lie down while I
work at the table. The paper will not yield
its words, I'm beginning to loathe poems.
I get in beside you, your skin smelling of food.

Mediterranean

Mediterrán

Our bed is rocking like the sea
beneath a ship. Your smell
is as unfamiliar as the harbour
to the tramp steamer.

I cling to you, water to skin.
The cells of my body are shoals
of excited fish and now the funnel
blares and the nets

are broken, the mesh has caught
on a reef. Sailors' arms
are glimmering in the regular
strobe of reflectors, the beams

of a squeaky, revolving
lighthouse. The gulls are ripping
the kraken to shreds: it chews
and digests its own body.

The ship splits in two,
the decks' tiny splinters pierce
the entire surface of the skin,
a pool of diesel spreads across the water.

The Table

Az asztal

Inside the table the wood is still alive,
the fever and fret of the loud forest
has wormed its way in, echoes in the grain,
I pick up its vibration when I touch it.

I'm running through dead leaves, skipping
past roots more muscular than my arm,
the thrushes warble in step with the pulse
of my brain. I am so much alone

I am a child. My feet are a constant drumming
as I run, I am screaming but cannot find you,
you've hidden somewhere, chattering and laughing
and watch me, while munching wild strawberries.

The mountain air is trapped
in the table's vascular baggage.
It is only with an axe that I can free it,
liberate it as one might a spirit,

I start it up like an old engine,
let its momentum take it, let it buzz
with energy, spin faster than the brain can,
let it drag the whole landscape behind it.

Seasons

Évszakok

On Sunday we escaped to play in the woods:
We ran, my head humming with birdsong,
Bees and bugs fizzed about my face,
We hid behind shrubs, behind tree trunks
To spy on strangers as they walked by.

The sun shone green through the swaying branches,
We played tag, pretended to be outlaws;
We clambered up rocks: I was harder
Than stone; quicker and slicker than snakes.
But sand got into my shoes, between my teeth.

I was up to my knees in dead leaves,
The mulch thick with ants, almost heaving
And crackling, as if the skulls of a whole flock
Of dead birds were crushed under the foliage –
I threw myself headlong although I was frightened.

Let darkness cover me, I could feel the damp earth
Beneath it, knew its raw stench. I was cold
And stood up, snow melted on my face and ran
Under my clothes. As it froze to my skin
It compressed me, snow covered me, my body was snow.

Miklós Györffy

The Magic of Facts

The Writer Miklós Mészöly at 80

Great generations in succession played a signal role in the history of Hungarian literature throughout the twentieth century. Most of them were grouped around one magazine or another, above all *Nyugat* (West), which alone is usually reckoned to have spawned three distinct generations over its thirty-three years of existence (1908–1941). Then there were also the writers concentrating on rural matters (misleadingly called Populist in English), for whom *Válasz* (Response) became one of the main forums, and the *Újhold* (New Moon) generation of the immediate post-Second World War years. Miklós Mészöly, who marks his eightieth birthday this year, is of that latter generation, the only other surviving members being the critic and editor Balázs Lengyel, the poet György Rába, and one still more senior contemporary, Magda Szabó, the novelist and playwright.

Oddly, but for all too obvious reasons, this list of generations comes to an abrupt end with them; or rather, although newer generations did arise to form clusters of great promise, these subsequently largely fizzled out and dispersed as peer groups. These are the generations that appeared following the Communist takeover. Occasional acts of rebellion apart, they had only state-owned, politically supervised magazines and publishers as outlets for their work and did not have a free hand in determining with whom they associated or in whose company they expressed their views. The list of the more significant writers who have followed Mészöly during this period—those who have not sunk into oblivion with the passage of years—presents a disparate picture: they are all writers who have gone their own separate ways and do not have much in common. Precious little in the way of a shared starting-point, movement, forum or poetic sensibility links Ferenc Juhász, Imre Kertész, Dezső Tandori, Ádám Bodor, István Szilágyi, György Konrád, Péter Nádas, Péter Esterházy, Péter Lengyel. At most they have

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Miklós Györffy
reviews new fiction for this journal.

occasionally shared a political stand. A list of those who once raised great hopes but have since dried up or lost their sparkle might be similarly eloquent.

Mészöly himself is in any case just as much a figure of this new Iron Age insofar as it was only his first steps, memories, friendships and a kind of solidarity that linked him to contemporaries amongst the *Újhold* generation of Ágnes Nemes Nagy, János Pilinszky, Iván Mándy, Géza Ottlik and György Rába, for he had barely begun to be published when he was silenced by censorship. It was essentially only from the latter half of the Sixties onwards, somewhat later than for contemporaries who suffered under similar restrictions, that the writer, by then in his mid-forties, was allowed an opportunity to speak. Even then the cultural tsars and party-line critics never tired of proclaiming how much they disliked, and how irksome they found it to tolerate what Mészöly was producing. Thus, not least due to those links of generation and poetics, he was an isolated and overlooked writer, far more solitary than fellow writers who displayed their allegiances all too obviously—to put it plainly, swam with the tide—at that time. Now it is they who have ended up on the periphery of literary life.

It was only when he was approaching his sixtieth year, in the late Seventies, that Mészöly really began to engage with the mainstream of Hungarian literature, and that was because young writers discovered precedents and inspirational examples for their own endeavours in his works and chose him as their master. Much the same happened with his contemporaries, that generation of writers and critics, loosely lumped together as 'post-modernists'. The Seventies similarly elevated Géza Ottlik, Iván Mándy, Ágnes Nemes Nagy and János Pilinszky to their rightful places. As it later turned out, not much else linked them other than agreement on their pioneering roles. But Mészöly was more than a master and exemplar for the likes of Tandori, Esterházy, Nádas, Lengyel, Krasznahorkai and László Márton, a favoured analytical subject for young critics. He was also a friend and colleague; not only did he influence them, but they influenced him in turn. One might say that he grew young again in this youthful company, except that Mészöly did not really need to grow young since age had barely left its mark on him, so there was no barrier, physically or mentally, to his being accepted as a peer by the new generation that grouped around him. His role in Hungarian literature of the present day is rather comparable to that of the film director Miklós Jancsó, another fairly late starter of the same age who is youthful and active to the present day.

What was it, then, that shut Mészöly out for so long from the prevailing literary discourse in Hungary only for the post-modern generation to integrate his work all the more into its poetics? To give an answer to this obvious question is not easy, for although Mészöly has had a large camp of admirers and disciples over the past twenty years, writings about him have been mostly subjective confessions, not infrequently hermetic texts that parade archness or the snobbishly opaque idiom of the insider. The sole work to essay a comprehensive approach

to the Mészöly *oeuvre* from a soberly objective standpoint is Beáta Thomka's 1995 book for Kalligram's 'Contemporary Hungarian Writers' series, and even she is hardly into her preface before we come upon the following: "The fact that five decades on there is still *only* a critical literature on Mészöly's work, and there has been no research to delve into the body of this manifold life-work from a historical or biographical, theoretical or historico-stylistic angle, is deeply thought-provoking... I embark on this endeavour in full awareness of the difficulties that arise from the absence of precursors."

We can at least take it for granted that Mészöly, without any ostentatious and defiant gestures, broke with basic Hungarian literary traditions consistently enough to rouse the suspicion of party critics from the very start, not just in ideological but in formalist terms too, indeed primarily in the latter respect. Precisely that was both the essence of his innovation and particularly troubling from the Marxist stance: with Mészöly the artistic form became a new and, as it gradually revealed itself, typically Central European world view. A tradition of linear, mimetic story-telling, constructed from the historical and sociological facts of life, had been very strong, at times to the exclusion of all else, in Hungarian literature up till the 1970s. Another very strong tradition was the cult of individuality and lyrical style. These aspirations were often hitched to commitment to political reform. Admittedly, the successive *Nyugat* generations, roughly in parallel with the classic and late phases of European modernism, had begun to chip away at those traditions, but at the very moment when Mészöly and the other *Újhold* writers were poised to follow, a distorted, salvationary social utopia cast its baleful influence over every aspect of life with unprecedented dogmatism. Literature became even more of a 'banner' than it had been before.

From a background that could in no way be called an intellectual forcing-ground that might have profoundly and definitively shaped him (he grew up in a Transdanubian small-town milieu, studied law at Budapest, he was pulled into the military endgame of the war during 1944-45 as a gunner and, eventually, deserter), Mészöly had no wish to have anything to do with literature of that sort. It seems very likely he already knew then that what truly fascinated him was something quite different—not just because it was at variance with the new political set-up and its propagandistic notion of literature, but also because it compelled him to draw conclusions that Hungarian literary discourse had not properly thought through before. Péter Nádas has written: "Fully formed within him already, forty years ago, in his twenties, were an ability and need, typical of only the very great, to handle an ego on the brink of pleasurable self-immersion in a highly impersonal, objective manner, yet without depriving it of the characteristic stamp of its own human personality. Hence, perhaps, the blazing intimacy and cool objectivity of his writings."

From the very outset, Mészöly portrayed the stark, objective images of existence, not in the abstract generalities of certain exponents of absurdist-existen-

tialist literature of the Forties and Fifties, but through the historical experiences of mid-century Central Europe—in the final analysis, in the field of force of an individual experience that was distanced in its impersonal ontological and structural perspective. There was little precedent for such an aesthetic in Hungarian narrative literature, its models being more to be found in contemporary writing further afield, above all in Camus, whose own beginnings only slightly predated Mészöly and in whom he was later to recognize a fellow spirit, making him the subject of an essay, *A világosság romantikája* (The Romanticism of Clarity). Like Camus, Mészöly sought to *live through* the true nature of existence in the light of a blinding clarity. In Mészöly's view, Camus does not take issue with 'nothingness', in the abstract sense that Heidegger or Sartre did, but "instead he takes issue with existence itself—with naked passion when he is unwilling to eke it out with assumptions. What he passionately fights for is to perceive existence, the world, as it reveals itself when caught in the act, not in the way it can be rationalized into probability. He chooses an extreme, unsheltered consequentiality, and there is indeed a smack of heroic childishness in that". On Camus' sentences he writes that "they stamp in the antechamber of light". They continually signal the possibility of knowing more but meanwhile are on the way towards silence: "He treats units of thought immured in individual sentences in exactly the same way as facts are apprehensible in the act."

Mészöly's prose is similarly half way between a romantic passion for apprehension in the act and a silencing clarity, the inexpressibility of cognition. Linear, continuous narration gives way to fragmentation and association, reassuring roundedness to disquieting openness and incompleteness. The narrator in a Mészöly work is not so much relating a story as juxtaposing fragmented elements of reality apprehended in the act, precepts, reflections, so that what is 'immured' in the sentences may manifest itself in their light. "Everyone searches in their own way for the necessarily reductive framework of authentic recitation," he himself says about his narrative method. "For the world, life itself, is a panorama cohering from a billion mosaics, atomistic events—incomprehensible in principle. On what, then, do authenticity and life-likeness depend?—I deliberately build from a non-cohering debris of facts so as to illustrate the *inexpressibility* of the material of events in the world."

This 'debris of facts' is often piled up on one another as the information, the 'data collection' of a strikingly detached, dispassionate chronicler or witness. It is not by chance that one of the delightful earlier novellas is entitled *Teréz krónikája* (Theresa's Chronicle). The first-person narrator of the perfectly tailored short story *Szárnyas lovak* (Winged Horses), relating a story with many lacunae and obscurities, ballad-like in its tragic aura, is a detached witness to the event. The narrator of another short story, *Merre a csillag jár* (Whither the Star Goes) is a 'stranger' with time on his hands who is almost a chance participant

in the events he relates. The main protagonist of the story-mosaics of Forgiveness is a clerk in a town-hall who is searching amongst documents in the archives for clues to mysterious, near-legendary, events in the town's past which had repercussions impinging on his own family history. Three novellas that originated at roughly the same time in the early Seventies, forming a small cycle as it were, are all given the identical title of *Nyomozás* (Investigation), with only a parenthesized serial number to distinguish them: (1), (2), (3). There are novellas which call themselves "maps", and the narrative voice in them unfolds the temporal dimension of the juxtaposed details in the map-like synchronous description of, as it were, a bird's eye view.

The short novel *Film* (1976) is related in the first person plural by a narrator who is not, so to say, an individual voice but an arbitrary impersonal viewpoint, a film camera directed by a fictive totality of readers. The camera is not merely an instrument of precision and objectivity but one of 'investigation', of 'developing' the past; the will, or curiosity, operating it is not bound by space and time, the contents or power of memory. *Film* is not, in fact, the script of a possible film; indeed, it cannot be compared to any film, only to a hypothetically possible film process, unrealizable in practice but all the more serviceable as a narrative process. It was with specific reference to Camus that André Bazin, the French film aesthetician, noted that in the realm of processes inspired by their affinity to film the novel at times went further than film itself: "...the novel has been best at expressing with authentic metaphysical validity an inhuman objectivism akin to the coldness of minerals. For what camera, one wonders, would have been able to remain so dispassionately detached from its subject as the conscience of the protagonist in Camus' *The Outsider*?"

Mészöly, too, wrote meticulous accounts of things reduced to their elemental, 'mineral' qualities, mainly in the first half of his career (e.g. *Jelentés öt egérről*—A Report on Five Mice) and *Pontos történetek útközben* (Precise Stories Along the Way). In retrospect, he sees this in the following terms: "I have been interested from the outset in the internal maps of raw material, and the extent to which I twisted my stories into a narrative form that was traditional or sought to distinguish itself from the traditional—that is something else. I could, perhaps, state as a fact that my interest in the internal maps of raw material prompted me into an inverted path of development. The gesture of the starting writer is to reproduce his direct experiences. It is an adolescence that has to be got beyond as soon as possible. That did not happen with me; I did not have an adolescence as a writer. Perhaps it is partly for this reason that I am not a writer in the classical sense but prefer to style myself a detective. I set off from metastasis and abstraction, that is to say, the algebra of the world, only later, in my senility, to start to become endlessly intrigued by the intense richness of the world, its fresco and its totality." This shift (I would not care to call it a turn) away from a stark, abstracting description of the world's 'morphoses' towards a magical,

synoptic presentation of the colourful wealth of facts happened in the latter half of the Seventies.

After sporadic beginnings, lengthy forced interruptions, and detours into children's tales, Mészöly burst irreversibly onto the Hungarian literary scene in 1966 with the novel *Az atléta halála* (Death of an Athlete). It is telling that the Hungarian original appeared only after French and German translations had been published—the sign of a grudging admission on the part of Socialist cultural policy that it had no choice, protest its rightness as it might, but to swallow the bitter Mészöly pill. Though Mészöly himself intended the story of an athlete pushing himself to ever-better performance as a self-destructive end in itself to have a parabolic validity, in this work too he was more preoccupied, when it comes down to it, with the uncertainty of causal investigation. The life and death of the famous middle-distance runner unfolds in the mirror of the confessional reminiscences of his former love, but the causal investigation is primarily about there being no explanation for his seemingly senseless death. For all the apparently pertinent endeavour, there is no convincing, reassuring and absolutionary explanation—at best only the necessity of failure of a man seeking escape from himself in performances and records.

Saulus (1968) is, on the one hand, another model novel: an account of the Biblical sudden conversion of St Paul from a stance that is not at all religious, or even ideological, but psychological and ontological, yet, on the other hand, it is again a portrayal of the uncertainty of investigation. Saul is a 'detective'—a snooper for the church police—and whilst harrying the disciples of Jesus he investigates, in the first person singular and on the border of interior monologue, the disquieting changes that are taking place within himself. The changes are virtually imperceptible, with roots stretching back years, of obscure signification, and when, at the end of that famous road to Damascus, he is blinded by the light for three days, Saul recoils from the realization that what has happened is irrevocable.

Precise Stories Along the Way (1970) is already an example of the objective prose that *Film* was to continue and consummate. In the spirit of the Dürer quotation that serves as its epigraph ("The lines cannot be traced by compass or rule, but must be hand-drawn from point to point"), Mészöly, somewhat after the fashion of the then triumphant *cinéma vérité* procedure, has a woman relate scraps of memories about her travels in Transylvania and Transdanubia in such a way as to connect her observations from point to point. Ultimately, these now shed light upon one another, now offer no connections; in any event, there is no 'predetermined rule', preconception, ideology or message—only 'precise stories' unfurling from lines that are drawn from point to point.

A personal component that generates 'story' and meaning cannot be completely excluded even here, of course, any more than in the ostensibly even more dispassionate and cooler *Film*. That work is not just a radical example of a film-

like projection of objectivism but, simultaneously, the verbalization of a kind of collective subjectivity or unconsciousness, and to that extent a prefiguring of Mészöly's later works. Emerging behind the slow-motion and, in itself, accidental series of events (an old and frail married couple's shuffling homewards and at the same time towards death) is a montage of pictorial fragments that are no longer viewed by the camera itself but by a collectivity ('we'), having a readily definable extension in space and time, which operates the camera. *Film* is not just an objective description but the personal utterance of a historical past that clings to the locality.

Around the same time, in 1975, Mészöly's impressive collection, *Alakulások* (Morphoses), also came out, marking the start of a slow, gradual shift towards a mapping of that intense wealth of the Central European region and history on which I previously cited him. Henceforth, the past of Mészöly's birthplace, the town of Szekszárd, and the surrounding hills of Tolna County, along with the history of his family, makes an emphatic appearance in his short stories, still not with a confessional, let alone sociographic intent, but with the aim of suggesting magical-mythical connections. The piece that also gives its title to the next collection, *Szárnyas lovak* (Winged Horses) (1979), which has achieved classic status in the modern Hungarian short-story canon, relates a tragic love story befitting a folk ballad in such a way that we learn next to nothing about the emotional complications but all the more about the irrational ritual, redolent of archaic concepts, which attends the tragedy and hints in muffled tones, metaphorically, at the passions.

In the short story *Megbocsátás* (Forgiveness) (1984), the town-hall clerk searching after his family's and his town's past, on the basis of fragments filed in the archives and in memory, comes to new, forgiving terms with himself and his family, thereby exemplifying, so to speak, the writer's relation to his subject: he forgives the figures and deeds summoned to memory, forgives the events; he realizes that the world from which he came and in which he lives is the way it is. His gesture speaks to the fragmentariness and incomprehensibility of this world; he magnanimously accepts that it does not disclose every detail and secret to him.

Magyar Novella is close kindred to this, its very title signalling the writer's intention, through memory traces of a vanished, increasingly legendary Tolna (i.e. 'Hungarian') life that cannot be assembled into a closed narrative order but are written associatively onto one another, to suggest a realm of experience for which the attributive 'Magyar' offers itself as an essential qualifier. In the short stories *Sutting ezredes tündöklése* (The Splendour of Colonel Sutting) (1987), constructed from an ironic pastiche or mosaic of elements from the previous century's events and milieu, and *Bolond utazás avagy néhány jelentéktelen körülmény részletes ismertetése* (Crazy Journey, or A Detailed Recital of a Few Insignificant Circumstances) (1987), with its biblical-legendary perspective, the

Hungarian broadens out unambiguously into a Central European dimension—a project to which Mészöly's second comprehensive collection of short stories, *Volt egyszer egy Közép-Európa* (Once There Was a Central Europe) (1989), also refers in its very title.

Once there was a Central Europe here that was the way it was. Mészöly does not embark on an interpretation of the region's history, nor even express the feelings or thoughts that he attaches to it—unless it be forgiveness. He creates mosaics of narrative tropes, narrative images, fragmentary forms, that convey metaphorically, at times almost in the manner of objective modern lyric poetry, an experience of Central Europe which is at once personal and collective. Since images and fragments dominate, larger-scale figures are not so characteristic of this newer phase of Mészöly's work as of the preceding phase. Many of the stories strike one as fragments of a family chronicle which was not, in the end, born as a rounded whole. A sort of counterpart to Péter Nádas' *Egy családregény vége* (The End of a Family Saga), with Mészöly we are dealing with a family chronicle of incongruent and discontinuous fragments, the broken shards of a shattered Central European world.

Thus the short novel *Családáradás* (Family Flood) (1995), the last of Mészöly's larger-scale undertakings, is not a family chronicle either, though with its six chapters and its elaboration of a Tolna mythology adverting to the world and motifs of earlier short stories, it perhaps corresponds most closely to the model for that genre. Taking as his point of departure a day in the thirties, but reaching back to Hungary's 1848–49 War of Independence and, by dint of several allusions, forward to the time of the Second World War, he conjures up, alongside the intricate intertwining of legendary-magic facts, the distinguished past of a family of the professional-lesser-noble class. He leaves in obscurity numerous circumstances to which he attributes no significance "in the imagination and magic of the facts", because it is as if he were addressing people already familiar with these details—the same 'we', a Hungarian or Central European public, whose viewpoint was already directing the camera of *Film*. Even if we can never fully know, understand or explain ourselves, Mészöly's work as a writer offers a stimulating example of how we may nevertheless strive, with passionate objectivity and restraint, to discover everything that we, and only we, can know about ourselves. ❧

Miklós Mészöly

Map of Alisca

Short story

One may imagine it as it was in reality—from the weir-keeper's cottage at Keselyű the mulberry-tree lined road leads to the church square in Szekszárd (some eleven kilometres), and, once there, we find ourselves in Alisca, which the Romans founded, only later gaining the name *Szegzárd,* though it is a mystery why. Of course, it is not clear either why the Romans consider Alisca the most appropriate name. Still, this may well be the homeliest name for those born at the time in the Bartina, Little Firkin and Mealies, or out by the Hermitage or Ambleway, or at the foot of Calvary Hill. Even then, however, Bald Hill cannot be compared with anywhere else. For a long while it is more a haunt of wolves, till they realize that arrows are fleeter than them, so they move off to other forests where there are fewer tracks, only to rove onwards from there, when they realize that bullets are even fleeter than arrows. The Romans light their beacons, flaring far and wide, on the summit of Bald Hill. On the North-South military road, which leads across today's church square, copper-scaled horses draw war chariots where later tanks will run out of diesel fuel, and it is here that they set fire to their plunder if suddenly forced to flee, here they eat their own horses, if there happens to be nothing else. Meanwhile, throughout all this, the sun shines and the moon rises, as they have ever since. It is as well to bear this in mind if one sets off from the church square towards Bald Hill, clambers up to Bati Cross, turns left along the crest and, from shooting range, surveys the battle plain. No trace is left of the bloody clash now, though the waters down in Turnkey Valley still wash out bones, only they can't be told apart. Since then mainly foxes whelp their cubs round here, and only in winter, when snow blocks the valleys and gullies, and fires burn in the wine-pressing sheds—only then might one mistake the mist-dogs padding under the windows for wolves. If Fekete, the hill shepherd, were still alive, he would certainly know more of the details, but he's not been seen around for more than forty years, so we shall have to make do with what can be learnt without him. If we turn east out of Alisca's town-gate, towards the Danube, where there is not yet a weir-keeper's cottage and mulberry-tree-lined road, only reed beds, islets of black poplars, the river's impassable

flood basin, we can follow a narrow tongue of land that later fishermen of the Sárköz region throw up to dam the water and catch fish. From here it is not far to the road-mender's hut, a few steps away from which is the Paradise Farm brick-drying yard. Not a particularly notable place, though it may just cross our minds that Podrács, the bandit from Upper Ireg, rests here a few days, having lain low for several weeks, and, growing extremely bored, slaps together a clay foal, then pins on it a label saying that he has ridden on this so far but will now continue his journey on foot, like other poor folk, for he too is such. The foal is preserved for a long time in the parish hall, later the town hall and, still later, county hall, but it has crumbled to dust by the time the municipal museum is built. Nor has there been an equestrian statue in Szekszárd since; and as to what might stand in Alisca's main square (that of some emperor)—we know not even that much. About King Béla IV, though, we know (by chance) somewhat more. On one of his military campaigns, he marches through this way with his troops— who are soon to be massacred by the Mongols, though they are not to know that yet—and the King takes up quarters in the convent building, praising the fresh water from the spring, which has dried up since then, we no longer remember even its site. Only Káldi, the other field-guard, swears that the spring may be in Castle Lane, if the water were actually to well forth. Now the narrow lane is full of ice-chilled fish, as the sun's noon rays shine into it only between one and two o'clock. That much heat is not enough, however, for the slimy ice-glaze to melt off the catfish and perch; only the market-trading fishermen are sweating, and they are sprawled on their bellies on rush-covered carts up above. Meanwhile an intermittent engine-note carries across even to here from the Rendás garage. In August nineteen thirty-four an antiquated, red Alfa Romeo is broken down into tiny bits here. Mister Rendás goes back again to the garage at night, and in the yard he again takes stock of the components parts under the canvas awning. These nocturnal inspections are part and parcel of Mr. Rendás, and it can be no accident that sick Fords and Mercedes arrive here even from as far away as Pest. The garage's back yard, incidentally, was an important ferry landing-stage on the flood plain in its time, it's hard to say exactly when; but whenever the Danube's water level rises, the ground water instantly gushes up here as well. From this it can also be taken for certain that the site lies outside the former town gate. Alisca's inhabitants settle here from Lombardy, so the spectacle of flood waters and flood plains is not unusual for them: the Po still spills its banks every year since then, floating off the cattle and, before that, the carved yoke-spars, and there, too, clay just cakes on the metal mirrors of brides-to-be that the water tosses onto the bank. A couple of years ago a few such mirrors were likewise found north of Lake Gurgler, but excavations were discontinued on account of the last, Great War; yet where one mirror has come to light no doubt more are also lying. Mister Perczel, the museum's porter, is not troubled, however; it even tickles him to think that the ground is full of such mirrors, and

that they preserve the faces of those brides-to-be. We recollect another sort of mirror, from the Harangi confectionery, and that could be described in words (a hopeless task in any event) as follows—that narrow doorway, for example, through which a cream cake is being brought out on its oval, silver platter. That door can be seen not just in a single edition but in at least ten versions, according to where one happens to sit and the angle at which one glances up at the vaulted ceiling with its overlaid row of bluish-green mirrors. In other words, through ten doors ten cream cakes on ten silver platters approach the table simultaneously—provided one does not forget the ceiling. That kind of thing, though, is just an incidental marvel, temporarily part and parcel of a town's past and future. (To say nothing of the present, for who knows what is happening *right now?*) It may be more important to mention the remnant half trunk of the walnut tree that toppled over in eighteen hundred and seven, which apprentice-lads who wander this way hammer full of clout nails, as a memento that they passed by. In more recent times nothing at all can be seen of the wood, so overlaid has it become with the heads of nails. Mr. Zelenka, the mathematics teacher, gets his pupils to count the number of nails once, but no two of them come to the same answer. Later they perform complex calculations in their maths lesson, by comparing the variable results of the counts, as to the *probability* of the number of apprentice-lads who have turned up in Szekszárd; then the same operations are performed by his students the next year. Remarkably, the result arrived at is never the same, always different. Then, one winter morning, Mr. Zelenka the teacher also dies, and under the terms of his final will they intend to bury the apprentice-lads' tree alongside him, since it will have to be cut down sooner or later, because at that very spot they erect a high-tension electricity pole with a transformer, for which they are unable to find a place elsewhere. (The simple truth, of course, is that tree and teacher do not end up directly next to one another, after all, because prior to that the spring inundation of the River Sió uproots the mouldering stump and sweeps it away, no one knows where to.) The electricity pole, however, is lowered without trouble into its concrete cradle, and it still stands on its place today. Of course, it's questionable whether it will still be standing there in a hundred years, and whether it will be remembered like Mr. Zelenka the teacher, or the clout nails. But it is not our business to conjecture about matters that we cannot decide. More certain—and such is its voice that it might be heard even in Alisca, were they to awaken—is the Giant Hill cloud cannon. Its constructor is Moses Szomjú, a Nazarene carpenter, now deceased. The squat gun barrel is a hand mortar of Turkish origin, which has already been lying a long time, in several pieces, in Benedict Gully when Moses Szomjú comes across it and from it contrives the cloud cannon. The town council designates a site for it on Giant Hill, in a crumbling wine cellar, which they refurbish and fit with a log door. If a hailstorm cloud approaches from over Sárpilis, Sióagárd or Bonyhád way, two men from the council troop

out with Moses Szomjú to Giant Hill, stuff an appropriate quantity of gunpowder into the muzzle, tamp it down, light the fuse, and aim at the heavens, or rather the clouds. This only fails to produce an effect if, for some reason, they arrive too late; otherwise there is no known instance of hail falling on Szekszárd—at most on Sárpilis, Sióagárd or Bonyhád. Giant Hill, incidentally, is three hundred metres high, but it could not have been much more than that in older days (erosion over the course of several millennia amounts to a few metres, provided larger earthquakes or landslides do not intervene)—and if it goes on this way, it will be neither lower nor higher henceforth. Thus the triangulation point (and occasional look-out as well), constructed of creosoted beams of timber, will provide a reliable reference point for many a year to come for those approaching Alisca from Pest-Buda so as not to miss the rural festivities and be present at the sacrifices of ox, wolf and woodpecker, the animals sacred to *Mars Silvanus,* god of trees and plantations. At the same time, one should reflect that Giant Hill and Bald Hill, both then and since, stand opposite each other, glowering unblinkingly like two wolves, and then behind both of them stretches Dark Valley Forest, where later, on the day of flowers and trees, the customary Whitsun excursions and picnics are organized. And since summer is about to arrive (so they say), an excursion of that kind will probably be timely now as well. For guidance, one may call attention to the following. Trickle Spring lies off in another direction, granted, but it is worth the detour to fill the bottle with water. (Béla IV too may well have praised the water of this spring, or possibly it was another one.) After that, crossing Little Firkin, we draw near to Chapel Square, with Hermit's Chapel, and we do not bear off to the right, towards Short Valley, which is indeed short and so tightly beset by hills that television sets are almost inoperable, though the stars are visible without disturbance; so we don't turn off right but stop on the way at the Chapel garden, where Vendel Balinkó, master weaver (textile artisan, by another name), still lives and works in nineteen thirty-four. There is truly not much to see here, but it is easy to picture Balinkó with his self-constructed loom between the two walnut trees, his blue felt cap, and his three-legged dog, which can unerringly sniff out the right thread from a snarl of them; or the clock flower-bed beside the well, by which one may safely set one's ticking watch. Only after that is it worthwhile to push on to Bald Hill. The path which leads up to the summit, at least five cart-tracks broad, and more of a sunken road, winds between two storey-high banks. Already in Alisca's day these clay walls render admirable service to wolves and soldiers by turns: whoever can take refuge here sooner from the snow-storm comes out better. (As the bones here, too, are revealingly mingled with one another, human and animal.) Up on the summit, by Bati Cross, we do pay no heed to the fact that Giant Hill (over the way) is thirty metres higher; we make do with the height to which we have clambered. From here to Dark Valley there will be less to say than hitherto. Though it would be fitting, on the day of flowers and trees, for one to be happy

and talkative, and in point of fact we are; only somehow there is less to say than hitherto. Of course, it's true that the forest really is *dark* and in no way comparable to the Danube forests, where even the water speaks and the boughs are louder too; yet, as far as possible, we take no breather until the goal of our journey, and already by half past nine in the morning we reach the first forester's abode, which a stout wicker stockade protects from wild pigs. The forester is taciturn; he does not ask us why we have come, only shows his weapons, the stuffed eagles, hawks, owls, and woodpeckers. He recommends that, as far as possible, we enter the forest in pairs, not alone, and later makes quarters for us in the hayloft. We have time, there's nothing pressing, he says, and it will be more than enough for us to return to Alisca at the weekend; only then do the big wolf sacrifices begin, guests are coming in, even from as far away as Rome, with the cheap excursion train from Pest, because it happens a full moon is expected, and maybe they will also light the beacons again...

(1979)

Translated by Tim Wilkinson

Map of Alisca

Károly Bari

The Holocaust in Gypsy Folk Poetry

In the Gypsy communities of old it was everybody's duty to make known one's observations and experiences relating to the hostile manifestations of the world. The troupes of itinerant Gypsies always left signs behind them wherever they went, for other clans. Ribbons in coded colours or dolls fashioned into certain forms from dark rags were tied to roadside bushes, and ancient Gypsy runic signs carved into the trunks of trees, in order to tip off caravan-dwellers who came by later to any lurking dangers.

The constant sense of being under threat, the mistrust of the environs, was in no way unfounded. Living by a set of autochthonous customs that differ from those of the prevailing societies, Gypsies have been persecuted since their first appearance in Europe. Awareness of persecution is deeply rooted in their thinking and has put forth a strong, vigorous shoot on which the buds of fear and caution have not withered to the present day, as a folk adage recorded in our own days shows: "Don't believe strangers, because they smile to your face but behind your back make laws to hang you!" That injunction, fused in centuries of experience, precisely captures the dread with which Gypsies have continually had to live since fleeing from India's Islamic wars during the tenth century.

Only for a short while were European countries well-disposed towards the caravans of Gypsies, calling themselves 'pilgrims', who were furnished with papal safe-conducts. Starting with excommunications in Bologna in 1422, hostility towards Gypsies intensified to the point where veritable manhunts and massacres by fire and sword were launched against them. The change in attitude is most vividly illustrated by the connotations of a word used in connection with the Gypsies. In fifteenth-century Germany, the life of the nomadic Gypsies was compared with the freedom of birds, often using the attributive *vogelfrei*. By the

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time of the rabid persecutions of the sixteenth century, however, *vogelfrei* no longer denoted that the Gypsies were 'free as birds' but 'gallows fodder for predatory birds'. A string of countries did all in their power to make this a reality by introducing edicts ordering their discrimination and elimination.

In 1500, Maximilian I outlawed Gypsies throughout the Holy Roman Empire, which gave a licence to capture and kill them. In England, according to some sources, during the reign of Queen Elizabeth I, 18,000 'Egyptians' were hanged purely on account of their race. Frederick William I of Prussia issued a decree in 1725 under which any Gypsy man or woman caught within the territory of his realm was to be executed without trial. On July 20th, 1749 the Spanish military, on the orders of Ferdinand VI, carried out a round-up of all Gypsies who could be found, a total of 12,000, and put them to death.

This unbounded hostility was presumably elicited by a moral system avowed by the caravans, on their travels from country to country, which saw all modes of acquiring food as permissible. Gypsies therefore had no respect for private property, whilst their very mode of life differed provocatively from that of societies that had adopted Christian norms. Attempts were made to justify the hostility by attributing to them a range of grave crimes—kidnapping, espionage, cannibalism, spreading heresy—in order to give the punitive measures a semblance of ineluctability.

The most terrible of all the genocidal campaigns in history is linked with Hitler and the Nazis. Between 1942 and 1945 around 600,000 Gypsies were killed in or *en route* to death camps. Some 50,000 Gypsies were dispatched from Hungary alone, very few of whom managed to survive. These deportations started in 1944. Gypsies rounded up in the Transdanubian region, to the west, and in the Budapest area were taken to a selection camp set up in the fortness of Komárom (Komarno) and transported onwards, mainly to Auschwitz and Dachau and their satellite camps. Mrs József Székely, a Gypsy woman from Zalaegerszeg who survived, recalled the horrific events as follows:

> The Arrow-Cross men and the police came on November 3rd. They told us to get ready to leave along with the children, because they were escorting us to a new workplace. Except that they didn't take us to work but led us to the railway station, packed us into wagons and transported us to Komárom. When we reached Komárom, the men were separated from the women and children. We were there for three weeks. The Arrow-Cross men continually beat and kicked us—the children as well. If they went looking for food, they were thrashed with clubs. Some had arms broken, others both legs, so badly were they beaten. We had to sleep amongst worms, in filth, in pools of water. The children died one after the other; those who were still babes in arms all perished. Many old people also died, starved to death. The Arrow-Cross men just tossed their bodies onto carts with pitchforks and took them off somewhere... We were deported... The next stop for the Gypsies then was Dachau.

For the most part, the Gypsy transports were murdered on arrival. Those who were not taken straight to the gas chambers were subjected to the horrific tortures of inhuman medical experiments. Gyula Balogh, from the Rákospalota district of Budapest, who was shunted around many of the concentration camps before finally managing to escape from Buchenwald and make his way back home on foot, is unable to erase the memories of what he experienced:

> There was water around the camp and it was fenced off with electrified barbed-wire. They carried out a selection. Those who were made to stand to the left were killed. An SS officer said to us, 'You lot have come here but there is no way back, you are going nowhere from here!'... Every week we were lined up naked for medical examination. Each time they tortured us, injected us with something or other... Ugh! That Mengele! The very ground should spit him back, refuse his body! The world has never seen his like for cruelty!

The body of Gypsy folklore that perpetuates the Holocaust in the folk memory fulfils the same function as those warning signs left beside the highway by the caravans of old. It conjures up the polymorphous faces of hatred like a row of admonitory dolls and utter the names of the prejudices whose tentacles reanimate the dark host of effigies time and time again.

I do not aim to give a comprehensive survey of all the folklore genres that draw on the subject of the persecution of the Gypsies, just to present briefly what one might call the typical features of one particular genre, and the diversity of its textual material. In showing the origins of that material, it will become manifest how the *Lager* songs, despite their improvisatory character, are pollenated by many existing genres and how the generalizing power of the processes of tradition interweaves the separate strands of individual tragedies into a testimony of communal validity.

It is an archaic form of song poetry, the dirge or *zhalvini gilyi*, that is best fitted to expressing the camp experiences. The genre is constructed from stereotyped elements of a lament character that form part of the folk lyrical tradition, but the features of the genre offer an opportunity for the insertion of improvised new textual units that narrate individual fates. The improvised song performances of survivors never mention the tortures suffered in the concentration camps, presumably because the pain and fear that these caused is indescribable. What marks texts referring to the death camps is their dry factual tone. In line with the traditions of the style, the place designated for destruction and the figures of the incomprehensibly cruel soldiers are limned only sketchily, without any details of the louring bodies of prejudices as background. The weight of the inexpressible feelings is borne by formulaic strophes adopted from related genres. Dirges and chanted supplications may be pinpointed as the source of these borrowed elements, but one can also discern the hallmarks of cursing songs from the most archaic stratum of folk poetry.

The passages from the dirges that were taken over into the *Lager* songs are those that palliate the diffuseness of the expressions of pain with devices honed and perpetuated in ancient rites in such a way as to make them acceptable to the conventions of the community. Two noteworthy motifs must be mentioned in that connection: the sending of a message and the survivor's plaints of being left all alone, because in interpreting them one can point to the most typical components of the Gypsy camp songs.

A common method of forming texts in the poetry of funeral rites of archaic Gypsy communities was for the keener to evoke the relationship between the deceased and the mourners in dramatic form. This imitation dialogue of the dirge generally opens with a description of the emotional shock of the wailing lamenters. That is followed by texts, spoken on behalf of the deceased, which describe the world beyond the grave from which the dead person sends a message back to those who have stayed alive. Transmission of the message is usually entrusted to a bird, in reference to the belief that birds are symbols of the soul and according to which only the soul departing the human body is capable of mediating between the real world and the transcendental sphere. The same corpus of beliefs invests the loan motif in the opening strophes of the camp songs. As a result, the German concentration camp whence the prisoner sends his or her message becomes a metaphor for the realm of the dead. That metaphorical character is reinforced by a mode of textual composition in which only the despairing message is formulated but the message remains unanswered. There is never a response from those outside the camp. The world of those selected to live does not hear, or has no wish to hear, the calls of those in trouble, has no wish to help the Gypsies—at least that is what may be inferred from the telling absence of traces of such texts.

Following his capture, Adolf Eichmann, organizer of the transports for the Head Office for Reich Security *(Reichssicherheitshauptamt)* of the SS, is reported as having said to the Israeli investigating judge: "Intervention on behalf of the Gypsies was impossible from any side at all. Obviously, the prejudice against this group was the strongest..." Eichmann's words, sadly, bear out and underscore the sense that Gypsy survivors had of the outside world's passivity, manifested in these folklore texts by this striking absence. The horrific freight of this metaphorical absence signals that they were aware nobody felt pity for them and their plaints were merely the death rattle of a fate that had already been sealed.

Units of particular content in the *Lager* songs are stanzas, rooted in cursing songs of magical function, which call on a supernatural force, or on God the All-Holy Himself, to punish the Germans and Hitler. The ritual pronunciation of curses was once a living custom amongst Gypsies but during the era of witchcraft trials, and under their impact, texts of this set of customs sank to the bottom of consciousness, only to resurface on the rare occasions where the affinity became close.

Texts deriving from slave songs of the Transylvanian Gypsies form a similarly important stratum amongst the motivic components. The most widely distributed is a chanted supplication begging for a change of season so that Spring may come round again and green grass cover the tracks of the escaped slave. From the fourteenth century onwards, the Gypsies of Moldavia and Wallachia were held as slaves by the boyars and treated much as livestock. The Romanian liberal writer Mihail Kogălniçeanu wrote in 1837 of his recollections:

> During my younger years, on the streets of Jassy, I saw so-called human beings with chained hands and feet, some also with metal collars around their foreheads and necks. They were cruelly whipped and then thrown naked into a freezing river ot tortured with smoke till they choked. Such was the despotism to which the wretched Gypsies were subjected... Neither populace nor Church nor guardians of the law showed any pity towards them...

Slavery for the Gypsies of Romania came effectively to an end only in the mid-nineteenth century, after the Crimean War, with their manumission in 1856. Memories of that servitude were preserved in a broad corpus of epic and lyric tradition, including sung historical ballads, the supplicatory sections of which were appropriated and built into the *Lager* songs. The singer would see the escapes from slavery that had been evoked so often during communal song performances as completely identical to the situation of his or her own escape from the concentration camp, so it was quite natural that lines of supplication and formulaic texts born of a fear that had already crystallized in folklore practice should be taken over as reflecting the singer's own feelings.

The most common components of the *zhalvini gilyi* are those giving voice to loneliness and to the pain of those who have lost members of their family. They express the defencelessness that these tragedy-scarred souls feel in the world, describing the grief, homelessness and misery that have become their lot. Pertinent here as a gloss is that in Gypsy thinking the blood ties of clan signify a person's greatest security, so that loss of one's family is equated in archaic consciousness with the community's vulnerability and loss of ability to defend itself. These two contents, intertwined and mutually amplifying, are present in the motifs of self-lamentation of Gypsy survivors of the Holocaust.

The various generic features presented in the foregoing are well illustrated by a *Lager* song collected in Transylvania:

> Little bird, o little birdie,
> Fly far away, carry the news,
> Tell how I'm in constant terror,
> tell how I'm in constant terror!

German lager, how hard it is,
German lager, how hard it is,
The prison guards are so evil,
The prison guards are so evil!

Hey there, Hitler, curses on you.
May God trample upon your face
like people walk upon the streets,
like people walk upon the streets.

Machine guns are barking away,
Machine guns are barking away,
My pursuers are getting close,
My pursuers are getting close.

God, give me some of your fortune,
Give a little bit of your own,
Help me get onto trackless tracks,
Help me pass along trackless tracks.

God, send me a drop of rainfall,
God, send me a drop of rainfall,
Mingle it up well with snowflakes,
Mingle it up well with snowflakes!

Mingle it up with snowflakes,
Mingle it up with snowflakes,
So the green shoots of grass may grow,
So the green shoots of grass may grow!

Cover the trail of my footprints,
Cover the trail of my footprints,
So I may find tranquillity,
So I may find tranquillity!

God, oh God! How you have thrashed me,
God, oh God! How you have thrashed me,
Perhaps nobody more than me,
Perhaps nobody more than me!

German lager, German lager,
There a gun was always barking,
All my family was wiped out,
All my family was wiped out!

I've lost all my family,
I've lost all my family,
Oh, what can I do, all alone,
Oh, what can I do, all alone!

Following ancient Gypsy performance customs, songs about the *Lagers* are always presented before, and with participation from, an audience. The community joins in the singing of familiar, formulaic stanzas and hums along an accompaniment to improvized text passages that the performer fashions from his or her own past. The song melodies are particularly poignant and sad, bearing out in full the thesis that human song has a universal expressive aspect. The German concentration camps, in the words of the ballads, were the 'killing grounds' of peoples, 'global cemeteries', and what is articulated in the songs of the survivors is that once a person finds himself or herself inside the barbed-wire, there can be no more hope, any more than there can be crying, because the pitilessly searing sun of suffering and destruction scorches the very wells of tears.

As yet no memorial has been raised to the Gypsy victims of the Holocaust. No one has yet asked the forgiveness of Gypsy survivors, or offered any form of compensation for the crippling of their bodies and souls. My aim in writing this has been to offer words of remembrance for them too. ❧

Translated by Tim Wilkinson

Lajos Srágli

American Capital and the Hungarian Oil Industry

After Hungary was granted the status of most favoured nation in 1925, the role and position of American investors in the Hungarian economy gradually expanded. In the nineteen-twenties British and American investors dominated and by the end of the forties they had the major presence in hydrocarbon production and processing.

According to estimates registered during nationalization in 1949, the value of properties owned by foreign interests and subject to nationalization came to 900 million forints, more than half of which was owned by US citizens. Most of the American property to be nationalized was owned by the country's single crude oil producer, Hungarian American Oil Industry, Inc. (Magyar Amerikai Olajipari Részvénytársaság — MAORT), Standard Electric Corporation (market share in the industry: 30%) and Vacuum Oil Co., which owned more than 25% of Hungary's crude oil processing facilities. Nationalization—without compensation—and the concomitant show trials seriously damaged relations between the two countries for a long time.

Vacuum Oil Co. was the first American enterprise to set up business in Hungary. From its establishment in 1899 to its nationalization, almost its entire stock was owned by the mother company, Vacuum Oil of New York (since 1931 Socony-Vacuum Co., New York). It was primarily engaged in importing, producing, purchasing and marketing lubrication oils and greases. In 1907 the company (with its headquarters in Budapest) established a modern, high capacity oil refinery at Almásfüzitő. From the end of the thirties on, the company became the most significant player in processing crude oil in the country. For a long period this was the only company capable of producing really good quality lubricating oils and greases, over and above the usual products such as petrol, kerosene and diesel fuel.

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American capital and oil production

A rapidly increasing demand for fossil fuels, ineffective Hungarian oil exploration—still using primitive methods at the beginning of the 20th century—and the lack of investment capital convinced the government that the state had to intervene as soon as possible. In order to improve the situation, the Government introduced Act VI of 1911, which (a first in Europe) declared hydrocarbon exploration and exploitation a state monopoly. The legislation allowed for the granting of concessions to Hungarian and foreign concerns.

The Treaty of Trianon reduced by two thirds the territory of the old Kingdom of Hungary and it also reduced crude oil and natural gas production. Oil and gas fields explored with the help of huge state subsidies were now outside the borders. This turned Hungary into an oil importing country, which meant economic dependence and an unfavourable strategic position. The situation was compounded by the fact that no known potential oil resources remained on Hungarian soil. In this situation seeking help from foreign capital was quite understandable.

In 1920 the Anglo-Persian Oil Co. was granted a licence to explore and exploit hydrocarbon deposits. After several years of unsuccessful exploration in the Transdanubian region, in 1927 the company surrendered its licence. In the thirties oil exploration conducted by the state achieved modest results. In 1937 a small oil field was discovered near Bükkszék, in the north. Similar exploration on the Great Plain was unsuccessful.

From the second half of the twenties the emerging depression in Europe limited foreign capital investment. Although oil exploitation did not become a depressed section, there was no guarantee of a return on capital since the resources of the given areas remained unknown. This uncertainty discouraged smaller companies, but large international concerns fought fiercely for markets and exploration sites.

In March 1932 English and American entrepreneurs established the European Gas and Electric Company (EUROGASCO) in Wilmington, Delaware. The company was engaged in obtaining oil and gas concessions in European countries with poor oil resources. Austria was the first to grant an exploration licence to EUROGASCO. The Vice-President of the company, Paul Ruedeman arrived in Hungary in the autumn of 1931 with a letter of introduction from the Secretary of State of the United States. He started negotiations with the Ministry of Finance.

The agreement on a concession was signed on 8 July 1933. The licence entered into force on 28 July with the approval of Parliament. The "Agreement between the Royal Hungarian Ministry of Finance and European Gas and Electric Company (London and New York)" granted mineral oil and natural gas exploration rights to EUROGASCO on the area of Hungary lying to the west of the river Danube. The agreement included the obligation to conduct geological surveys

and a 15% share for the state in commercially produced oil. The Contract obliged EUROGASCO to establish an independent company in Hungary.

In September 1933 EUROGASCO started explorations using modern methods and equipment. In the autumn of 1934, following geophysical and geological surveys, test drilling started. The first well was drilled in the area of Mihályi, a village in Sopron county, where pure, commercial quality, high-pressure carbon-dioxide was found. In 1937 the company found significant oil and gas resources in the region of Budafapuszta, county Zala, also in commercial quantities. This success prompted the foundation of MAORT on 28 June 1938. More than 90% of the company's share capital (later all of it) of Pengő 14,357,000, was registered by Standard Oil Co. of New Jersey. MAORT brought Hungary into the club of oil producing countries: in 1940 domestic oil production supplied 100% of the country's requirements.

Until 14 December 1941 the company's President and Vice-President were American citizens and only three Hungarians were on the first Board of Directors. At the beginning most of the executives (engineers, geologists, geo-physicists, drilling foremen) at EUROGASCO came from England or the US. The company was obliged to employ Hungarian staff and a Hungarian work-force with the exception of positions requiring skills or experience for which no Hungarians were available. By the beginning of the war just a handful of foreign employees remained at MAORT. Only Paul Ruedemann, the Vice President and General Manager, and George Bannantine played some role in the company's management.

Managed by the Treasury

Although oil production in Hungary was not significant on the world market, it became strategically important during the Second World War. Production expanded rapidly and new fields were opened. After the beginning of the war, however, managing became more and more difficult.

On 13 December 1941, Hungary declared war on the United States. From that date on MAORT, as an American company, was operating on enemy territory. Consequently, on 20 December 1941 the Minister for Industry ordered the Treasury to take over the management of the Company, while leaving the owner's rights untouched. MAORT's activity was suspended and a brand new company was established to run the company's plants. This new company was registered under the name of "MAORT Plants Managed by the Hungarian Royal Treasury" ("Maort Üzemek a M. Kir. Kincstár Használatában"). As a result, two separate companies existed side by side and the legal situation became hopelessly entangled.

Hungary's declaration of war on the United States made it impossible for MAORT to be managed by American citizens. As soon as the 12th of December, the Minister for Industry, at the request of the Prime Minister, appointed Simon

Papp as General Manager of "MAORT Plants Managed by the Hungarian Royal Treasury", and ordered Paul Ruedemann and the other Americans to leave Hungary. Standard Oil Co. also decided that Simon Papp was to be requested to look after American interests and to manage MAORT. Ruedemann and George Bannantine left the country on 16 January 1942.

Under wartime conditions, executives were anxious to preserve the company for times after the war and to save oil fields from destruction. Since MAORT was able to satisfy the country's oil requirements in 1942 and the Company fulfilled all its obligations laid down in the Agreement and the Contract, they frequently wished to rationalize production, against the wish of the Ministry for Industry, which was demanding more and more exploitation. From the outset, the Company's experts tried to find the most economical way to extract oil from available deposits. They wanted to introduce scientifically supported production methods, similar to those used in the United States. They were against accelerated extraction, which did not pay heed to the laws of nature. But German and Hungarian government officials were keen to serve German interests and boost production as early as the middle of 1940. From this time on they kept on trying to force a rapid increase in oil production.

Production peaked in 1943 (837,710 tons). This record was primarily attained by finding and exploiting new oil fields and expanding existing fields, not by ruthless extraction. In 1944 production started to decline, caused by the natural run-down of the available oil, by accelerated wear and tear on machinery, by a decline in productivity and later, by Allied bombing.

Directors of war production, especially the Germans, did not believe that decline in production was caused by natural depletion and other unavoidable conditions. Both Hungarian and German Nazis accused MAORT of sabotage. The Germans attempted to take over the oil fields: in June 1941 IG Farben, the main fuel supplier to the Wehrmacht, initiated negotiations with Standard Oil Co. of New Jersey for a transfer of MAORT shares. These negotiations failed. Following this, the Germans tried to convince the Hungarian Government to put pressure on MAORT to provide more fuel for the war. The directors of MAORT resisted all outside influence exerted on the company's affairs, but they agreed to sell products to Germany, led purely by business considerations.

Under the terms of management issued by the Treasury and due to the war, profits could not be repatriated. The Company raised its share capital and became heavily involved in social services. They built a workers' hostel, established a cultural centre and provided housing estates for employees. Modern housing estates in the American style were constructed at Bázakerettye, Lovászi and Nagykanizsa before the end of the war. Most of these buildings still exist and are of architectural value. The Company always paid wages well above the Hungarian average and provided a high level of social services for its employees, even during the war.

The decade following the war brought crucial changes to the Hungarian economy. Eight decades of capitalist development was interrupted and driven into a dead end by politics. Since the private sector was not keen on following state directives and acting against its own interests, agencies of the state started to intervene more and more aggressively. The conflict between the aims of the state and the interests of companies could not be reconciled without radical state intervention, which, ultimately, led to nationalization. This solution became extremely important for mineral resources and energy, which were the basis for heavy industry and were regulated by international economic agreements. Also, these fields were important for war reparations. As the result of the ongoing nationalization of industry and mining, by 1949 only very small companies and companies owned by foreign interests remained in private hands. Government Decree 20/1949, enacted in December 1949, ordered the nationalization of all remaining companies owned by foreigners. (Among them the Vacuum Oil Co. Ltd., which was owned by Americans.). In fact, companies owned by foreigners had been taken over by state management well before this date, since their managers were charged with espoinage and sabotage.

Among the show trials connected referring to the economy, the one for sabotage involving the directors of MAORT was the most important. It took place in the autumn and winter of 1948.

Although during the war years MAORT suffered minor hiccups, the real trouble started in 1945. According to conditions laid down in the Armistice, and confirmed by the 1947 Peace Treaty, the Interim National Government was obliged "to restore all legal right and interests of the United Nations and its citizens on Hungarian soil and to return their properties unchanged". Consequently, all MAORT plants which had been taken into the custody of the Treasury should have been returned to their original owners. Although in November 1945 the Government formally satisfied this requirement, and representatives (Paul Ruedemann aand George Bannantine) of the American owners were allowed to return, they could not exercise their legal rights for several reasons. First of all, from April 1945 until the date of the Peace Agreement all MAORT plants were controlled by the Red Army, and were later taken over by the Allied Joint Control Commission. As far as oil production was concerned, until the summer of 1945, MAORT obeyed the orders of local Red Army commanders. Later the Ministry for Industry decided on the monthly quotas for oil extraction. Production levels were set at will, without any reasonable planning. The combination of various factors, such as Soviet demands, compensation requirements, foreign trade agreements, the needs of Social Democrat (later the Communist) party funds and similar policies were what determined the Company's output.

The Company's management, despite all protests, was forced to produce a huge volume of oil on demand. At first MAORT managers and engineers mentioned the damage caused by ruthless exploitation only in production reports, later they sent strongly worded memoranda to the Minister for Industry and to the Prime Minister. But neither Soviet army commanders nor the secretary for mineral production in the ministry paid any attention to their protests. As the result of all this, between May 1945 and the end of 1947 crude oil production exceeded rational levels by between 20 and 50%.

The Soviet-Hungarian economic agreement, signed on 27 August 1945, was the basis for the Soviet-Hungarian oil production contract, which was signed in April 1946. These agreements paved the way for Soviet-Hungarian joint ventures. The directors of the companies involved and several officials in the Ministry for Industry lodged protests from the beginning. (In October 1945 the Governments of the United States and Great Britain protested to the Soviet Union against this agreement, which granted 50% ownership to the Soviet Union in key Hungarian mining companies, industry and transport. In a memorandum sent to the Hungarian Government on 9 November, the United States reminded the Government that the 1925 friendship, commercial and consular agreement was still in force, which applied the principle of most favoured nation status to the relationship of the two countries.

The Soviet–Hungarian agreement was fairly unfavorable to MAORT. On top of exploiting Trans-Danubian oil fields above their capacity, the Hungarian Government brought into the Soviet-Hungarian joint ventures the 15% share of the Treasury, which was contributed by MAORT's oil production. Consequently, the Soviet company regularly demanded its share.

At the time of the above agreements, production in MAORT oil fields were already on the decline. Natural slowing of output was significantly added to by accelerated exploitation. The latter also meant that the caloric value of gas that went into the atmosphere each day was the equivalent of about 120 railway trucks of good quality coal. There was a real danger that a huge volume of oil, estimated at one decade of Hungarian consumption, would remain underground forever. The financial loss was estimated at about 2 billion forints, although the Company emphasized that this damage could be avoided with rational production and reconstruction of the equipment. They promised more output by opening up new oil fields, but exploration needed money. By this time the formerly strong company was close to bankruptcy.

Domestic crude oil supply closely followed the desperate situation of MAORT. Although production still exceeded domestic demand, the first signs of shortage surfaced as early as 1945.

In 1946 and in the following two years reparations and exports accounted for more than two thirds of oil production. Experts involved in the preparation of commercial negotiations cautioned that hastily signed agreements were danger-

ous. Despite these warnings, a series of agreements were signed under mostly unfavourable conditions.

In order to satisfy Soviet demands, the proposal to nationalize the oil industry came up as early as 1945, but it was removed from the agenda out of foreign policy considerations. An American memorandum sent in reaction to the nationalization of coal mines in 1946 called the attention of the Hungarian Government to the fact that the Government of the United States would keep a close eye on oil assets in Hungary owned by American interests.

The memorandum did not exclude nationalization, but only with full compensation. Compensation on that magnitude was impossible in the prevailing state of the Hungarian economy, only one option remained open to the Government. They had to show that MAORT was in breach of the agreement with the state. In such a case all previously granted rights would revert to the state, regardless of whether the company was bankrupt or not.

The nationalization of MAORT was urged principally by the Communist Party. Until mid-1948 the Ministry for Industry did not back this demand, unlike the Economic Council and the Political Police, who were unconditional supporters of the idea. Despite strongly worded instructions received from state controlling bodies (Ministry for Industry, Supreme Economic Council, National Planning Office, etc.) and disputes on oil production and prices, representatives of the American shareholders still believed that Hungary would observe the agreement signed with MAORT and the requirements of the Peace Treaty and the Armistice concerning foreign property. They trusted that a peaceful settlement would be finally reached all the more so, as the directors of MAORT received several promises during negotiations held almost every week during 1947 and at the beginning of 1948. These promises remained only promises.

The solution

A report prepared in 1947 analysed the position of MAORT oil production and contained an urgent warning on reducing a dangerously high level of output to an appropriate, sustainable level. Instead of accepting reasonable explanations, from the spring of 1947 inspectors swarmed MAORT to monitor their obligations. Needless to say, these official inspectors were looking for mistakes, they were bent on proving that production was being sabotaged. In several cases they tried to falsify reports in order to justify "stronger" action against MAORT. Despite all their efforts, the closing report of the inspection did not find evidence of sabotage or wilful damage. Nevertheless, the state secretary for the oil industry did not leave any stone unturned in order to nationalize the company, although earlier he was against this move. In a memorandum sent to the Minister, he demanded the revision of the MAORT agreement, and in a report written in September 1947 he accused MAORT of sabotage. The leaders of

the Communist Party, and in particular, Mátyás Rákosi, joined in and fiercely attacked the company and its directors. Records indicate that not only state inspectors and ÁVH (State Security) men, but also Soviet experts participated in the investigation.

On 8 May 1948 Dr Pál Székely, a state inspector empowered with a wide range of rights, was assigned to MAORT. In his introductory address Székely clearly expressed his mission: he would ensure that the interests of the Communist Party were enforced and that MAORT would be nationalized.

The change in foreign policy played a significant role in establishing a new situation: global interest created two opposed political blocks. Consequently, stressing American ill intentions became part of official policy. Before the MAORT trial, but after a broadcast by Radio Moscow on 7 January 1948 (on Wall Street agents and on the Marshall Plan, "which was jeopardizing the sovereign European states") in Romania, in March 1948, oil companies owned by American and British interests were prosecuted for sabotage. All this was not coincidental, nor were the arrests in Hungary in June 1948. Ferenc Angyal and István Rizsinszky, both of them former MAORT mining engineers, were sentenced to 15 years within a month of their arrest for sabotage.

From September 1948 national and local newspapers regularly carried banner headlines on the arrests and the accusations against MAORT directors . The allegations were based on the gradual decline in oil output, which was explained as deliberate sabotage on the part of the company's American and Hungarian managers. The prosecutors asserted that the accused were attempting to overthrow the People's Democracy in Hungary.

On 12 August 1948 the State Security Authority (ÁVH) arrested Dr Simon Papp, the retired MAORT General Manager, in September Bódog Ábel, the manager of the Purchasing Department, Kálmán Barnabás Chief Geologist, Béla Binder an engineer, the manager of the Production Department, and Ruedemann's secretary, Johanna Osán, Dr István Pőzel, the Company's lawyer and two American citizens, Paul Ruedemann and George Bannantine. (In order to avoid any formal mistake, Gábor Péter, who headed the ÁVH took part in the arrest of the two Americans). On 24 September 1948 the company was placed under state control, with sabotage cited as the reason.

Their alleged crimes were detailed first in the "Grey Book" (its full title was "Report of the Hungarian Ministry of Internal Affairs on MAORT sabotage"). This publication, intended mainly as propaganda, included "confessions" in the accuseds' own hand, and later it was to become the basis of the prosecution. Mixing facts and spurious accusations, it made an impact since it appeared to be an indisputable presentation of the truth. The compilers were motivated by the fact that the proper presentation of production and other data could support a charge of sabotage.

The "Grey Book" and the indictment attempted to present the alleged sabotage as an attack by the United States on a new-born People's Democracy. This

major point, which surfaced first in the MAORT case with such an emphasis, did have precedents. From 1947 on, the Hungarian Communist Party waged a propaganda campaign against the United States. Although those directing the trial itself could not decide on the final charges until September, the choreography of the show trial was based on the arrest of the Americans. They had to decide whether the sabotage was only organized by a few Hungarians opposed to the People's Democracy or if it was an intervention by a Great Power, now the official enemy. The authorities focused on obtaining "confessions" from the Americans, who duly obliged following physical torture and psychological pressure. As part of the show, they had to write their confession in their own hand. Once this was attained, on 26 September they expelled the two Americans. According to the memoirs of Simon Papp, only the intervention of the secretary at the American Legation managed to prevent the deportation of Rudemann and Bannantine to Bratislava. ÁVH officers tookd them to the Austrian border. On arrival in Vienna, Paul Ruedemann made a deposotion to the American consul. Needless to say, Hungarian newspapers presented his statement as "obvious lies".

The trial

The charge was a mosaic of supposed allegations presented as facts, fabricated details of reports submitted by state inspectors, "confessions" of witnesses, reports written by appointed "consultants" and of uncertain statements. A significant portion of the arguments consisted of political accusations. The organizers of the trial had to provide "convincing" political reasons, along with technical arguments, which did not persuade those familiar with oil extraction. According to the charge, the accused sabotaged their work in order to overthrow the Hungarian People's Republic. This document was drafted by Dr György Váradi, an ÁVH captain, who was assisted by Dr Márton Bodonyi, the prosecutor. Most of the facts were supplied by Dr Pál Székely.

A special council of the Budapest People's Court heard the case, with Vilmos Olti presiding. The trial was public, some of it broadcast live on radio. The accused were heard in the first four days, followed by arguments by the prosecution and by the defence. Despite previous threats, the accused pleaded guilty to only some of the charges. Simon Papp offered the least resistance. Experts for the prosecution (Géza Szurovy and László Forgács) alleged that the reduction in oil production was an active act of sabotage. Witnesses for the prosecution also talked about sabotage. Those who choreographed the trial allowed only the presentation of evidence by the prosecution. Witnesses for the defence were not heard, unfavourable expert opinions were dismissed.

Pursuant to Act VII/1946 and Act XXXIV/1947 on the protection of democracy and the republic, the sentences on 9 December 1948 were very severe, Simon Papp was sentenced to death, Bódog Ábel to 15 and Béla Binder to 4 years in

prison. Kálmán Barnabás was acquitted. The lawyers appealed against the sentences. The appeal was heard by the National Council of the People's Court. The highly politicized charges were repeated, but a few mitigating circumstances were added. There was a reduction in the sentences: Simon Papp was given life, Bogod Ábel's sentence was reduced to 10 years in prison, and in the case of Béla Binder the forfeit of property and deprivation of civil rights was cancelled.

The entire proceeding clearly indicated that the trial was aimed not at punishing the accused, who were innocent, but to justify the takeover of MAORT's property to the outside world. The trial was also intended to demonstrate that Hungary, due to sabotage, was unable to fulfill its reparations obligations and international economic agreements.

The arrests, the trial and the sentences were not the end of the MAORT case. In September 1948 a series of fundamental changes were imposed on the Hungarian crude oil industry and on the Company. On 24 September, referring to sabotage, MAORT and MAORT Gas Marketing Co. were placed under state management.

On 30 November 1948 the US Legation in Budapest handed over a memorandum to the Hungarian Ministry of Foreign Affairs, in which the US Department of State protested against the arbitrary taking over of MAORT, stating that they rejected those lies and malicious accusations which were aimed to attribute sabotage to the owners and employees of MAORT. The memorandum emphasized that the American Government regarded the behaviour of the Hungarian Government in this matter as a serious infringement of American interests and rights. However, a series of American memoranda did not change the outcome of the trial and the fact of the Company's seizure. In legal terms, state management did not mean nationalization, since the Company's ownership remained unchanged, but there was little difference in effect.

The MAORT trial had a significant impact on the fate of the defendents. Only a few well-informed officials knew in advance that the death sentence of Dr Simon Papp was never intended to be carried out because they knew that there was no-one else of his qualifications and experience in Hungary. During his seven years in jail he was incarcerated in every penal institution of the country. But he never rested, he was engaged in scientific problems of oil, mineral ore and hydrogeology, he evaluated survey data and prepared expert opinions. He learned about his wife's death only when pardoned in 1955. He was seventy when he had to get a job in order to qualify for a pension. He held the position of geologist at the National Crude Oil and Natural Gas Trust (Országos Kőolaj- és Gázipari Tröszt) until 1962. He died in 1970. Those in the profession never doubted his innocence, but he could be remembered only quietly for a long time. His true life and work was revealed to the world only on the 100th anniversary of his birth. In 1986 the University at Miskolc and the Museum of the Hungarian Oil Industry organized an exhibition in his memory. His bust in the same muse-

The Majerszky trial

The suppression of the 1956 Revolution brought in its wake many trials on trumped up charges. One of them was that of a mining engineer, Béla Majerszky, and his associates.

Between February and July 1957, sixteen were arrested. They were charged with participation in the Revolution and, in particular, membership of the workers' councils within the petroleum industry. Both the documents of the investigation and the prosecutor's opening statement show that this was not the sole pretext why the charges were brought: in each instance stress was laid on the antecedents of the accused. The father of one was a Lutheran minister, another accused had allegedly been a Horthyite informer, a third had spent a longish period in Germany after the war, the majority came from professional families. Of the sixteen accused, twelve were university graduates and another had completed a technical college course. Special stress was laid on the fact that eleven of them had earlier been in the employ of the Hungarian-American Oil Company (MAORT). This was particularly noteworthy in the case of Béla Majerszky, the principal accused. Not only was his relationship with MAORT emphasized, but particularly his direct relationship with Simon Papp, who had been convicted of sabotage in the MAORT trial.

The 73-page-long judgment of the Majerszky trial speaks of the magnificent deeds of men with high skills, of awards received for outstanding work, of their patents and innovations, not to mention that they had done their duty during the Revolution. In the case of just about every one of the accused both the charge and the descriptive part of the judgment mentions that, during the Revolution, they did their best to maintain order and to protect the oil fields, including the assets of the enterprise that they were responsible for. They defended the Party secretary and members of the political police.

Nevertheless, they were found guilty of activities directed towards the overthrow of the democratic political order, and of passive sabotage. The sentences passed were all heavy and the majority of them were confirmed by the Supreme Court.

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um was unveiled only in 1987, on the 50th anniversary of the inception of industrial oil exploitation in Hungary. In 1989 the Hungarian Academy of Sciences reinstated his membership (he had been expelled in 1948). In 1990 he was granted a posthumous Széchenyi Prize for his life achievements. Béla Bódog was already ill during by the time of the trial and died in jail in 1953. Béla Binder was released in 1951 and returned to the oil industry.

Meanwhile MAORT, owned by Americans until it was eventually nationalized on 31 December 1949, remained one of the biggest mining companies in Hungary. Its activities were significant not only in the economy of the entire country, but in Zala county, near the oil fields they provided employment and

housing, roads and bridges. The company's organization, management, applied technology and relation with employees (engineers, workmen and clerks) followed an American pattern that had been refined over a century.

The Cold War and the Thaw

The issue of the nationalization of American-owned companies and the related show trials was not closed in the fifties. A great number of newspaper articles and much propaganda materials were published during the decades that followed, which all tried to explain that sabotage was a tool used by United States to destabilize the People's Republic of Hungary. The Information Department of the Ministry of Foreign Affairs compiled a collection of documents in 1951. This "White Book" detailed all the so called sabotage cases and was published in Russian, English and French. In 1960 Pannonia Press put out a book in English, *Hungarian-American relations in 1918–1960,* in which a chapter on the MAORT case was headed: Everything for Hitler, nothing for the people of Hungary".

In show trials conducted after 1956, the old shadow still haunted: the ever-present American enemy was still engaged in sabotage, just as at the end of the forties. In trials related to the oil industry in 1958 (see the box p. 81), inquiries and accusations referred to former MAORT employment still mentioned the American connection.

This cast a shadow on American–Hungarian relations for a long time. As the result of nationalization and related diplomatic complications, in February 1951 the United States froze all East-European bank accounts, including Hungarian, and in August the same year all trade benefits enjoyed by East Europe were suspended (including the status of most favourable nation). No attempts were made to improve bilateral relations until the beginning of the sixties, although in the summer of 1956 the Ministry of Foreign affairs investigated a possible normalization of the situation, when they sensed some sort of easing of strained international relations. The investigation showed that besides political problems, unsolved economic issues made normalization more difficult. They assumed that during negotiations the Americans would undoubtedly raise the question of outstanding debts. Although at this stage nobody assessed the actual amount of debts, it was clear that the United States would make significant demands in relation to loans advanced since 1920, and to compensation for war damage and nationalization of American assets. They believed that repaying the debt, calculated at hundreds of millions of dollars, was "not in the interest of the country" and delaying tactics were the best solution.

Only in 1964 did the United States and Hungary start negotiations on the question of American property . The positions did not change much until the early seventies. At the beginning of the negotiations the US demanded $226 million for war damages and compensation for nationalization, but this amount

was soon reduced to $58.2 million. The biggest single item was MAORT, representing $28 million.

In 1970 the United States reduced that to $35.7 million, but the Hungarians declared this to be unacceptable. Negotiations stalled until 1972, when, between 2 and12 October, the parties reached a preliminary agreement. Hungary would pay a symbolic amount of $18.9 million over 20 years, in equal installments, as final and full compensation for all nationalized property and war damage. (This payment was a condition for restoring Hungary to the status of most favoured nation.) The agreement was signed on 6 March 1973 by Péter Vályi, Deputy Prime Minister and William P. Rogers. Thus the matter of war damage seemed to have been finally settled by December 1976: the US Treasury announced that Hungary paid USD 4.3 million. Damages payable for nationalized American assets cannot be easily traced, due to the lack of accessible sources. The parties had serious differences of opinion on which demands were acceptable and which were not. The most significant items were the demands of the owners of MAORT. Although, according to the original agreement signed in 1933, MAORT should have enjoyed hydrocarbon exploration and exploitation rights and other advantages for a period of forty years from the registration of the company (1938), this was suspended three decades before its due date. The dispute was concentrated on the expected profit of possible hydrocarbon production during these years, profit which was lost to the company. The Hungarian state used the accusations of the show trials, because they believed this was the only way to justify the transfer of concession rights to the state on the grounds of breach of contract. After much dispute and several setbacks, Hungarian–American relations improved in 1978 and as the result, the Holy Crown was returned to Hungary after its long sejourn at Fort Knox in the United States. Also, Hungary was granted most favoured nation status, albeit temporarily (9 July 1978). The resolution on unlimited and unconditional trade concessions entered into force only in 1992.

All this meant that although trading problems were settled in the seventies, at least at the level of reaching agreements, domestic politics did not change. Indeed, the official position remained unchanged up to the last minutes before the fall of Communism: sabotage and foreign help offered to domestic political enemies were held to be true. Politicians never admitted that the sabotage trials conducted in 1948-49 and in the years after were in fact show trials, all the relevent documents remained confidential, and were never made available by Public Archives. In 1990 an Act was introduced on "Declaring political convictions between 1945 and 1963 null and void". Although it repealed these convictions, it did not list the trials and names of the accused and convicted. It failed to declare that the accused never committed the alleged crimes. So *de facto,* then, they have never been rehabilitated. ❧

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Vera Pécsi

The Standard Electric Trial

The lieutenant-general asked how your were and you said you missed things — fruit, for instance.

– I used to get fruit but now I don't.

– And you wanted dental treatment.

– I don't have a toothache but I want my teeth to be looked at; I don't know though if there's a dental surgery in the prison. It's not that important unless I'm going to be kept here for long. But if I am...

– I'll have your teeth looked at ... [...]

– May I ask if my case has been forwarded to the Supreme Court?

– Yes, as far as I know. I don't know exactly when the hearing takes place.

– There's been no hearing yet, then?

– I have no information on that. I can see that's something that worries you.

– I hoped the hearing would take place in four or five months. Now fifteen months are gone, and I haven't been told a thing.

– I don't know. Your case is certainly there, and this is the business of the administration of justice.

– I'm sorry for making a nuisance of myself but I would like to be released at last.

– We think this is quite natural. [...] We used to meet more often, and you looked more cheerful, even though the hearing was still ahead of you.

– Back then, I didn't think... I didn't believe that I would be held in prison for so long. I assumed it would take a couple of months and then I'd be free. If I knew why this is happening to me, then I could understand and it would be easier to bear.

This conversation took place on 26 April 1951, in an office in the brand new headquarters of the ÁVH, the State Security Authority, already known as the "White House", on the Danube embankment in Budapest. The questions were

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asked by Dr. György Szöllősi, and were put to Robert Vogeler, aged 40, an American citizen. Vogeler was arrested on 18 November 1949. Three months later he was sentenced to 15 years prison for espionage and sabotage in the Standard Electric trial. In May 1950 the sentence passed by the trial court was upheld by the Supreme Court of Justice—in the absence of the defendants. Nor was Vogeler given any notification of this.

On 26 April 1951, Lieutenant General Gábor Péter, who then headed the ÁVH, 'received' the illustrious prisoner, then in his seventeenth month of captivity. Péter first inquired about the prisoner's health and wishes, before going on to remark that the US Government showed no signs of taking an interest in the welfare of its citizens imprisoned abroad. In fact the American envoy had contacted the Hungarian authorities the day after Vogeler had been detained, and diplomatic negotiations had been underway ever since then. On 24 April, two days before the above conversation took place, an agreement was reached on the date and conditions of Vogeler's release. Neither the lieutenant-general, nor the colonel cared to impart this information to Vogeler.

The interrogation was conducted through an interpreter, as neither Gábor Péter nor György Szöllősi spoke English, and Vogeler did not speak Hungarian. It was also recorded. The interpreter's words were transcribed and attached to the court files of the Standard Electric trial, files which amounted to some fifteen thousand pages.[1]

Robert Vogeler had ben trained as an electric engineer. He arrived in Budapest in 1948 as an employee of the International Standard Electric Corporation (ISEC), with the job of representing the interests of the American owners of the Hungarian Standard Electric Co.

Budapest Standard Electric

Manufacturing took off in Hungary in the last quarter of the 19th century. The two main features were the overwhelming presence of foreign capital and the initiative and defining role the state played. The telecommunications industry is a case in point. Taking advantage of a belated start, state of the art technologies were introduced. The industry enjoyed a continuous supply of state subsidies and tax benefits, and built up strong ties with the American, Belgian, German and Swedish companies who then led the market.

Egyesült Villamossági Rt. (United Lamp and Electric Co.), or as it was known later, Egyesült Izzó (United Incandescent), was founded in 1896. With the spread of electric lighting and the telephone, followed later by the nationalization of the central telephone exchanges, demand for the company's products grew apace. The factory concluded a long-term licensing agreement with Western Electric Co. as early as the 1910s. The American company later became a major shareholder in Egyesült Izzó. The shareholder agreement extended beyond

the mutual exchange of patents and covered the trading of manufacturing and merchandizing know-how. They also jointly applied for state tenders. Egyesült Izzó became the sole marketing company for Western Electric's products in Hungary, Romania, Serbia and Bulgaria. In 1912, the electric bulb division managed to acquire General Electric's licence for the manufacture of tungsten lamps. Marketed under the trademark Tungsram, these have enjoyed unbroken popularity to this day.

The company enjoyed a monopoly position on the Hungarian market. The high rate of state orders, however, rendered success directly dependent on the exchequer and indirectly on the country's economic and political situation. After the losses of the First World War and the successful monetary stabilization (through the help of the League of Nations) Hungary was the recipient of considerable foreign capital. This was devoted mainly to infrastructural investment, including the development of the telephone network. Apart from reconstructing and expanding the traditional manual telephone exchanges, Egyesült Izzó engineers were among the first to bid for the installation of Western Electric's latest, rotary automatic exchanges. Engineers in the Hungarian Post Office built up personal contacts with foreign companies linked to Western Electric as a way of keeping in touch with current technological innovations; the Post Office ran free English language courses for its employees.

In the early 1920s, both Western Electric and Egyesült Izzó were controlled by ISEC and through ISEC by International Telephone and Telegraph Corporation (IT&T). Based in New York, IT&T controlled its subsidiary companies through ISEC; their relationship was laid down in a long-term agreement. Under its terms, ISEC agreed to supply technical and manufacturing information and to make available to its subsidiaries any patents it controlled. The subsidiaries agreed to pay a 3.5 per cent royalty plus a 1 per cent service charge calculated on their gross annual sales in dollars. The fees and charges had to be paid annually to New York. The subsidiaries also agreed to make available to ISEC all information they possessed, including processes, techniques, developments and patents, unconditionally and free of charge. The companies were all given numbers. The Bell Company in Antwerp was numbered 7, the French factory 6, the Hungarian 4. These numbers were inscribed on all Standard products, which were marketed throughout the world, thus indicating the location where the patent had been developed. Another condition was that Standard products had to be as standardized as possible; in other words, they had to be interchangeable. The Hungarian company thus became an organic part of the international Standard empire, and played a role in the international market.

In the course of the 1920s, both the bulb and the mechanics sections of Egyesült Izzó grew into large divisions in their own right. The idea of separation was raised by each parent company, International General Electric Co. and ISEC, representing Western Electric, independently of one another. The ISEC leader-

ship said that launching an independent Hungarian Standard Company was necessary for 'solving the Balkans situation', as the Hungarian experts knew how to line up important state commissions in that market. The Hungarians set the condition that licensing fees be reduced and that the new company also be in control of the entire Yugoslav market, alongside the Hungarian, Romanian and Bulgarian, as they refused to share it with the Bell Company in Antwerp. After negotiations, the new shareholding company, Hungarian Standard Electric Co., was founded in 1928. In 1935, it passed into full American ownership. IT&T had a board member for daily decision-making and auditing, who came to live in Hungary.

From 1929 onwards, Hungarian Standard—just like other IT&T subsidiaries—marketed wireless receivers that they themselves had developed. Indeed, it was these wireless sets that made the company's name among consumers. There was an attempt to register the trademark, but the claim was rejected on the grounds that the word 'standard' was a word in common currency, and no company even if so named could register it. As the saying went at the time, "The Standard can only produce Standard products strictly to the Standard's standards." With the relevant IT&T documentation and its intellectual and production capacity, the company made a successful bid for the manufacture of transmitters. The Lakihegy transmission mast, built in the mid-1930s, was for many years the most modern structure anywhere in the world and was the tallest in Europe. The heroic age of conquering the market came to a close by the end of the decade.

The way out led through war preparations and to a new world war. The American-owned Standard was one of the companies that were involved in the inflation-financed Hungarian and later German armament programme. Through the two Vienna Awards, Hungary regained some of its territories lost under the terms of the Treaty of Trianon; this also led to the printing of money in the absence of cover and new state orders. Special tasks had to be carried out in special circumstances. Hungarian Standard Electric engineers could neither request nor receive any help from sister companies in the design of telecommunications equipment made on orders from the Ministry of Defence, as all related information was top secret and strictly confidential. The company was declared a war factory, with a military commander appointed as director. No changes took place in ownership, but when Hungary entered the war on Germany's side, the British and American board members resigned their posts on the grounds of travelling difficulties. In accordance with an American–German agreement, they were replaced by representatives of the German Standard Company.[2] At the end of 1944, when the Germans were retreating, the factory was scheduled to be dismantled and taken out of the country, but this did not happen. In December, production was halted. Those living in the vicinity weathered the siege of Budapest in the well-equipped air-raid shelter of the factory.

Under Soviet control

In addition to the damage suffered through being a *place d'armes,* Hungary, like the other countries on the losing side, had to pay reparations. Under the terms of the armistice, Hungary had to ship raw materials, machinery and other manufactured goods, 300 million dollars worth to the Soviet Union, Yugoslavia and Czechoslovakia. Following the practise evolved during the war, the re-start of industrial production, the restoration of war damage and the reparations supplies were financed by the uncovered issue of money. The inflation rate increased as the Government's financial obligations grew, while revenues decreased. By the summer of 1946, inflation had reached an unprecedented level. Following the issue on 1 August 1946 of the new national currency, the forint, the scope of movement for companies, both those already nationalized and those still in private and foreign ownership, were marked out by the Government's financial, credit, price, salary and tax policies as well as by the centralized control of raw materials and energy, a measure introduced because of the limited supplies.

Production in the Standard factory started again in February 1945 under Soviet control. The company's share of the war reparations came to nearly 8 million dollars, which in 1946 amounted to 90 per cent of its total production. Again, special tasks had to be fulfilled in special circumstances. Foreign trade was paralyzed, production documentation was available only from the foreign sister companies, and raw materials had to be imported from the West. Working capital was lacking, and the accounts of the Standard and the Reparations Office showed systematic differences. In 1947, Hungarian Government debts amounted to 4 million forints, in 1948, 7.5 million. Since dollar accounts were frozen, the company could only cover its running expenses from loans. The interest was fixed by the State, yet was not recognized as a cost in the centrally fixed prices. In 1948, the company was nearly bankrupt.

Geoffrey Ogilvie, representative of the American owners, arrived in Hungary in December 1945. In view of the difficulties, he requested to be transferred as early as 1947. Auditing was the duty of Edgar Sanders, who had been employed at the London subsidiary before the war. In 1947, a new American representative arrived and resigned within a year. His departure coincided with the arrest of the MAORT leadership, among them P. Ruedemann and G. Bannantine, both American citizens. On 24 September 1948 the company, which was owned by Standard Oil, was taken under State control without compensation following allegations of sabotage.[3] Not quite friendly till then, the Hungarian–American relations now became openly hostile. In the MAORT case, and also in Cardinal Mindszenty's case, serious charges were voiced against the United States. The State Department delivered several official notes in protest. In January 1949, the Hungarian request for the return of the Holy Crown of Hungary was turned down; in February, President Truman sharply criticized the Hungarian Government at a press conference.

In October 1948, IT&T chairman Sosthenes Behn started negotiations with the Hungarian Government by his own personal initiative. He saw a chance for agreement, as in contrast to oil mining, where the Russians had great experience, American know-how seemed indispensable in the telecommunications industry, which was of equal strategic importance. Colonel Behn[4] was received by Béla Sulyok, secretary of state at the Ministry of Finance, who indicated the Hungarian Government's willingness to buy the American company. He proposed that those Hungarian assets that had been shipped to Germany during the war and had passed under American control be returned in exchange. The Americans turned down the offer. The peace treaty stipulated return of the Hungarian assets taken during the war. The Americans had begun restoration of such assets,[5] which, however, was suspended in 1948 on account of Hungarian nationalization and unpaid debts. Negotiations on the renewal of the co-operation agreement were continued in November between Zoltán Radó, head of department at the Ministry of Heavy Industry and Robert Vogeler, director of ISEC. Vogeler warned the IT&T leadership from Vienna in the following words: "Geiger[6] is in serious danger. The political police are compiling a dossier accusing him of sabotage and other crimes. They may put him in jail if the negotiations are unsuccessful from the government's point of view. The Communists want all technical information they can get, and they have submitted ... a list of impossible requirements... At the moment, the discussions are revolving around the issue of claims. The claims include those of the telecommunications system as well as those of the reparations administration, and the obvious intent is to assess enough penalties to wipe out the company's debt to ISEC. The committee refuses to accept our defense that late deliveries have been due to lack of raw materials, conflicting priorities, frozen capital, etc."

On 31 May 1949, the complicated, compromise-ridden draft agreement was ready. Since it in part concerned embargoed products, it had to be approved by the US Government. Hardly four years after the war, at a time when Great Power conflicts were ripening among the former allies, one of the last American-owned Hungarian companies could not have been more than just a speck of dust in the machinery. For a time, the Hungarian Government led its negotiating partners to believe that plans for nationalization would be discarded if the Standard company helped the Hungarian army to gain access to modern telecommunications and security equipment. Perhaps the American strategists also thought of how the agreement might make valuable information available to them. This was a game for politicians rather than businessmen. A decision was pending for months, and with this, the fate of the mediators and the Hungarian Standard company was sealed.

The Standard show trial

In the summer of 1949, Vogeler pressed his American principals several times, indicating that the Hungarian government started talks also with the Philips company. The telegramme in reply from New York read: "Desirable you go to

Budapest and stay there for next several weeks if necessary to keep things tranquil. Pending action here on proposed agreement which we using every endeavour to expedite." Vogeler arrived in Hungary on 30 September 1949, a couple of days after the verdict in the Rajk trial was delivered. László Rajk, former minister of the interior and then of foreign affairs, was sentenced to death for the trumped-up charges of espionage, disloyalty, and the promotion of the imperialist powers' war designs. For those involved in the Standard affair, the only question that remained unanswered realistically must have been that of timing—when they were to be dealt the role of scapegoat in the failure of signing the agreement.

Executive manager Imre Geiger was being closely watched by the ÁVH. His close colleagues were told to inform on him, he was being shadowed, his telephone was bugged and his mail was read. The Hungarian delegation at the talks was led by Zoltán Radó, who had fled the country because of persecution and returned from Britain only after the war. Easily suspected as an agent, his name was mentioned in the Rajk trial too. Sanders and Vogeler were under surveillance by counter-espionage agents. "Outside observation was being employed aggressively, and Sanders and Vogeler discussed phenomena related to their surveillance more than once," an operative report says about them. Vogeler informed the American mission of their being observed, and also made a complaint to Zoltán Radó. The American commercial attaché advised him to leave Hungary immediately; Radó said it was a warning that time was running out for the signing of the agreement. Both were right.

On November 1949, Zoltán Radó was arrested. Those in charge of the surveillance of Imre Geiger knew that he and his family were about to leave the country. His intention to defect was taken as an admission of guilt, and he was arrested on the border on 10 November. Vogeler attempted to leave 'legally'. On 17 November, he 'sent messages' to his observers, by phone, at a factory meeting, and in a letter to Secretary of State Sulyok, to the effect that, as the decision was taken in Washington, the ISEC management were expecting him in London "for discussing questions of detail, collecting documentation and authorization in writing and briefing". On 18 November he left for Vienna, driven by his chauffeur who had earlier been recruited by the ÁVH. He too was arrested at the border and taken to the ÁVH headquarters at 60 Andrássy út, Budapest. On the 21st, Sanders was also detained.

On 29 December 1949, a government decree was issued on the nationalization of factories employing more than 10 persons and those still in foreign ownership. Speaking at a mass rally, Ernő Gerő, second only to Rákosi in the Communist Party leadership, said—and these words could indeed be taken as draft indictment for the Standard show trial: "We are talking about huge companies, such as Standard, the Telephone Company, Shell, Vacuum, First Hungarian Thread Works, and the Budakalász Textile Mill. Through the owners

and management of these companies, foreign imperialists used them mostly as front organizations for building up a spy network and carrying out actions of sabotage. We have seen this in the MAORT case and more recently in the case of the Standard, which is now being nationalized."

All in all, 24 persons were arrested and another 80 interrogated as witnesses or experts during the trial. The first testimonies were about the post-war difficulties Standard had sustained—belated supplies, scarce raw materials, the lack of production documentation, the unsatisfiable Russian and Yugoslav claims, financial difficulties, and the disputes with state agencies. The defendants submitted that the Americans had participated in company management since 1928 (!) actively and since 1935 (!) had reported to the ownership in regular monthly reports on economic and political events with a bearing on the production and marketing potential. Neither did they deny having exchanged production documentation, designs of the communications networks made on government commission. This was frequently done through the legations as postal services were both slow and unreliable. During the war, Sanders was an officer in the British army and was stationed in Budapest as a member of the Allied Control Commission afterwards. He joined the company after demobilization. As his CV revealed, Vogeler had attended the US Naval Academy at Annapolis for three years. These were reasons enough to take them for professional spies.

Among the documents in the court files there are interrogation plans. "To support, based on the interrogation and the outside investigation, Sanders' activities as intelligence agent while in Hungary with the British mission. To uncover, e.g., and question him about his spy contacts, the owner of the Éva Café in Székesfehérvár, etc. We shall get Sanders to copy in English the final version of the notes, which are to be submitted to the court, then get him to read them out to 'compare' them to the original, and make a recording of them." In his writing, György Szöllősi admitted that "No written evidence of Vogeler's activities is available, nor can we expect to have access to such. It is imperative that we strengthen the sense in him that any improvement in his situation can only be expected from himself, separated from his commissioners and the powers behind them. He needs constant attention. This is the only way we can expect him to behave tolerably at the trial." Ervin Faludi, a major in the ÁVH, wrote as follows: "We succeeded in making Radó believe it is favourable for him to be charged in the Standard case, rather than the London spy case. I have sketched the political significance of the Standard case for him, and of his testimony relating to it, in broad outlines. It is to be decided if the negotiations conducted between the Standard concern and the Hungarian Government and their delay should figure in the trial and if so, from what angle. This calls for further instructions, for based on the interrogation of the detainees, no precise information can be gained as to whether the Government's economic policy had anything to do with the negotiations dragging on."

In 1970, a strictly confidential report on the Standard affair, for in-house use only, was compiled in the Ministry of Interior.[7] It states: "No direct physical constraint was used in the procedure, though threat of it was made. In an indirect way, however, the long-drawn-out, exhausting interrogation, without any breaks, can be viewed as physical constraint employed against the defendants. [...] In order to obtain a confession, the defendants were told not to take either the court procedure or the expected sentences too seriously. They were told that the trial was meant for those outside, for public opinion, and that they themselves would be set free soon. [...] Around 20 November 1950, the head of the ÁVH, Gábor Péter, and his deputy, Ernő Szűcs, dealt with the major defendants. From then on, the majority of the defendants made depositions as they were requested to. Though the interrogators refused defendants' offers to make 'any confession', they actually took down even suppositions as facts. [...] An essential deficiency of the political investigative work showed in the way the investigators formulated the testimonies of the defendants. Minutes of the confrontations were drafted and typed up in advance, and the defendants and witnesses were made to sign them. [...] Due to the lack, or also weaknesses, of previous operative processing work, the majority of the defendants were put under the surveillance of the prison network."

The indictment was ready on 9 February 1950. The trial began on the 17th. Several versions for the open hearing were drawn up, and the final version was fixed at a rehearsal. Questions to be put by Judge Vilmos Olti and Chief Prosecutor Gyula Alapy were formulated in advance,[8] just as were the replies by both the accused and the witnesses, as well as the sentences. Time for the assigned counsels was precisely measured out, as was the number of minutes in which the defendants could make their pleas, which had been written in advance. Before the hearing, the accused were issued clean clothes and ample provisions. The audience was admitted by personal tickets made out for numbered seats. Of the 106 seats, 40 were given out to ÁVH members, 20 to journalists, 2 each to the American and British legations, and the rest were distributed among trusted ministry and factory employees. ÁVH agents kept an eye on the audience at the trial and made a summary of the remarks they heard and also of the 'criticism' that appeared in the foreign press, and these were attached to the documents of the case.

Vogeler's and Sanders' detention and court trial received great publicity in the American and British press. A leader in the 20 February issue of *The New York Times* said that it was a theatrical production taking place in Budapest, with coached players. A BBC commentator, who watched the events for three days, gave an account of his impressions, saying that although Vogeler and Sanders spoke in English, the way they articulated their thoughts was almost unintelligible. The terminology they used, the commentator said, was totally alien to the spirit of the English language, and this showed that the texts had been written in

Hungarian first and then translated into English. The AP correspondent posed the question: Was Vogeler forced to plead guilty by administration of drugs, torture or threats? *The New York Post* leader ended by ironically remarking that they treated Vogeler with mercy as he was forced to admit he was neither a Trotskyite nor an agent of Tito's.

On 21 February 1950, the Budapest Criminal Court sentenced Imre Geiger and Zoltán Radó to death and Robert Vogeler and Edgar Sanders to 15 and 13 years of imprisonment respectively. The others in detention, both the accused and witnesses, were sentenced in camera to several years of prison. On 6 May 1950, the Supreme Court dismissed the appeals and upheld the rulings of the first court. On 8 May, Imre Geiger and Zoltán Radó were hanged. Their farewell letters were attached to the trial documents.

"I want my husband back"

Vogeler's wife, who lived in Vienna, notified the Budapest American Legation of her husband's disappearance on 18 November 1949.[9] On the 22nd, Foreign Minister Gyula Kállai received Nathaniel Davis, the U.S. Minister,[10] and informed him of Vogeler's arrest and the charges against him. The envoy objected to the increasing number of American citizens being charged with sabotage and espionage, and reminded that Vogeler was conducting business negotiations for the benefit of both nations. He insisted that the Americans were convinced of Vogeler's innocence and could not be persuaded otherwise unless concrete factual evidence was forthcoming. He stated it was untenable that they could not visit Vogeler and provide legal aid for him, though they had the right to do so in accordance with the 1925 American–Hungarian friendship, trading and consular agreement and with general international practice. He spoke about the growing publicity of the affair, which might lead to further deterioration of the two countries' relations, and finally suggested that Vogeler be expelled from Hungary, even though that might mean failure to reach an agreement. The foreign minister replied merely that the case was still in the investigative stage, and the questions would all be answered in time. From then on, the American legation staff made daily queries by telephone or in person, but they never received a proper reply.

"As you are well aware, the Hungarian Government has neither taken any action nor made any satisfactory response to the repeated representations. It is also pertinent to recall in this connection that, having received assurances from the Ministry of Foreign Affairs that an appointment with Mr Rákosi would be arranged, I was eventually informed that he was on vacation[11] and would not return for several weeks. This denial of all cooperation will be looked upon as proof that the Hungarian Government, as already widely believed by the public, is proceeding in an irresponsible manner contrary to

all recognized principles of humanity and equity," Minister Davis wrote in a letter to the foreign minister.

On 3 January 1950, the two countries exchanged official notes. "The United States Government has found it necessary to refuse to permit private American citizens henceforth to travel in Hungary [...] and find it inappropriate to continue to permit the maintenance of separate Hungarian consular establishments in Cleveland, Ohio and New York City." In its reply the Hungarians stressed that "neither threats nor the prospect of retortion can alter the firm stand that it has not and will not tolerate foreign intervention in its domestic affairs." In mid-January, Hungarian consulates in the United States were closed, and the stamps in American citizens' passports said these were not valid for Hungary. The State Department went as far as threatening a suspension of diplomatic ties.

Deputy Prime Minister Mátyás Rákosi received Davis at the end of January, and told him that they could see the fair working of Hungarian justice at the open hearing of the Standard case in February. He proposed that negotiations be continued on future Hungarian–American contacts in light of the outcome of the trials. An article reporting on the hearing in the February 19 issue of *Szabad Nép* had as good as set the tone two days before the sentence was actually passed: "This gang of American spies, which has now been brought to court, has been especially treacherous. It turns out that the official American and British diplomatic missions have served, in Hungary just as in other people's democracies, as regular intelligence gathering centres, where envoys, counsellors, secretaries and attachés mainly engaged in maintaining contacts with spies and forwarding their reports. [...] The testimonies show, like a drop out of the ocean, the totally atrocious and devious nature of the designs that are being directed from Washington and in carrying them out the scum of society is being made to serve the preparations for a new war."

In the spring of 1950, the Hungarian Ministry of Foreign Affairs proposed to the American minister, as though nothing had happened, that negotiations be continued. For a short time it seemed there was a chance to bring the matter to a close. Accepting an earlier American offer, the Hungarians requested, in exchange for Vogeler's release, the reopening of consulates, permission for American citizens to travel to Hungary, and continuation of the restitution that had been halted since 1948. In June, however, talks broke down again, because of a front-page article in *The New York Times* under the title "Vogeler in Exchange for the Crown". Although not a word was said officially of the Hungarian crown in connection with the Vogeler affair, the Hungarians refused to sign the agreement, by then in a final form, claiming indiscretion. They added instead two more conditions: that the Voice of America was not to broadcast their programmes on the frequency they were given under international agreements, because it was jamming Radio Petőfi broadcasts, and that the American Government declare that St Stephen's Crown was part of the restitution.

The American press followed Vogeler's fate and, indirectly, the case of the Holy Crown, with great attention. Hungarian expatriates raised their voice against returning the crown. Others came to the conclusion that all information leaked on the crown was just 'provocation on the part of the Communist Hungarian Government'. In March 1951, Vogeler's wife published a series of five articles in *The New York World-Telegram* and *The Washington Post,* entitled "I Want My Husband Back". In them she flung bitter accusations at the US Government for not doing all they could for the release of her husband. "Are we going to let ourselves be pushed around by a mere Russian satellite without attempting any of the legal resources open to us? The State Department probably will be mad at me for saying all this, but they will not be half as mad at me as I am at them," she wrote.

The State Department gave a reply to the new Hungarian offer on 9 April 1951. Davis informed his Hungarian partner that the Voice of America no longer jammed the broadcast of Hungarian Radio, and as far as the crown was concerned, he handed over a diplomatic memorandum: "The Government of the United States is not prepared to discuss the return of St Stephen's Crown as a condition to the release of Mr Robert A. Vogeler. This property was not removed by force from Hungary but was surrendered to the United States authorities for safe-keeping and is being held in trust by them. It is therefore outside the scope of restitution and continues to be treated as property of a special status. The Government of the United States does not regard the present juncture as opportune or otherwise appropriate for talking any action regarding its disposition." Davis indicated that unless he received news of Vogeler's release by the 30th of April, his Government would continue auctioning Hungarian assets held in the American zone in Germany in compensation for Hungarian debts. Thenceforth the Hungarian Government, very 'diplomatically', put aside further attempts to bring in the issue of the crown, and on 21 April, the agreement on Vogeler's release was signed under the original conditions. On 24 April, the American envoy was notified that Vogeler was to be released on 28 April and handed over on the Hungarian–Austrian border. They also agreed that the fact of the handover was not to be made public before it actually happened.

It was at this juncture, on 26 April 1951, that the earlier quoted dialogue between Colonel Szöllősi and detainee Vogeler took place. In the typed transcript, Colonel Szöllősi marked the following for Gábor Péter:

– Did you picture a prison like this?

– I never thought I would be put in prison.

– When I interrogated you you always said you did not imagine an interrogation was like that.

– I expected to be treated in a different way.

– What way?

– One hears terrible stories about prison in general and in Hungary in particular.

– What is your own experience?

– I am very much surprised.

– You told me once you would be writing about it all.

– I am not a writer. If I wrote my memoirs, they would not believe I was writing the truth. They would think I had been paid. I know what people think in the States.

– In other words, if you wrote about it, you could not write the whole truth?

– I do not want to talk about it, I want to forget the whole thing. I know I am relatively all right, in view of the circumstances, but I would not have thought I would be locked up for so long or that I would have been put in prison at all.

Two days later, in the morning hours of 28 April, Vogeler was bundled into a car and driven to the Austrian border at Hegyeshalom. His wife and several journalists were waiting for him on the other side, as the date of his release could not be kept secret from them. The following day, the American press reported the event on the front pages. Vogeler's first statements, as was to be expected, disappointed the journalists. A further misleading factor was that he was in good physical condition, even if he spoke haltingly and vaguely, for he had spent fifteen of his seventeen months of detention in solitary confinement, totally cut off from the outside world. He learnt from the journalists that Geiger and Radó had been executed, and that Sanders and the other detainees were still in prison. This made him cautious. He said he was sorry for not showing a more impressive behaviour in court. He was unable to reply to the journalists' straightforward questions and tell them exactly by what methods his admission was extorted from him. "That is a difficult thing to determine whether you are drugged. It depends on your physical condition at the time. If your are kept awake long enough you don't know whether you are drugged or your mind just ceases to function normally," he said. He also refused to say whether he had been asked, before he left prison, not to comment on any specific phases of his imprisonment. He said his own testimony of about 50 pages contained some truth, but there were 'several technical mistakes'.[12] Closing the interview Mrs Vogeler apologized for not being able to give a 'better story', *The New York Times* wrote.

Robert Vogeler published his memoirs in America in 1952 under the title *I Was Stalin's Prisoner.*

Edgar Sanders was released on 18 August 1953. At Prime Minister Imre Nagy's order, he was pardoned from the remainder of his sentence by the Presidential Council of the Hungarian People's Republic. Of the other prisoners, their families received no information before 1954. Most of them were released on parole in 1956.

After the Standard affair, no telephones were available in Hungary unless the applicant produced a recommendation from their workplace and even then one had to wait for several years. The first crossbar telephone exchange, under a Swedish license, was installed in 1968.

The financial settlement on debts, war damage and compensation for nationalized assets between Hungary and the United States was signed in 1973.

The US Government returned St Stephen's Crown to Hungary in 1978.

On 20 November 1989, the Hungarian Supreme Court declared that the sentences that had been passed 40 years earlier in the Standard trial had been without foundation and constituted an abuse of the law. Charges were dropped as no offences had been committed. ❧

NOTES

1 ■ The passage quoted is an excerpt and an edited version of the spoken words. The documents of the Standard Trial, arranged in 46 files, have been available for research in the Municipal Archives since 1997.

2 ■ SS Standartenführer Edgar Veesenmayer, a secret emissary of the German foreign minister, arrived in Budapest in the spring of 1943 as a board member of Standard Electric.

3 ■ See Lajos Srágli's article on pp. 71–84.

4 ■ Behn obtained his military rank in the First World War and went on using it in civilian life.

5 ■ The gold reserves of the Hungarian National Bank were returned within the framework of restitution.

6 ■ Imre Geiger was appointed executive manager by the American owners in 1948.

7 ■ The 50-page report is available for research in the Office of History, Budapest.

8 ■ A note on the margin reads: "Comrade Rákosi wants to see the questions."

9 ■ Documents of the American–Hungarian diplomatic negotiations conducted on the Vogeler affair are found in the Hungarian National Archives.

10■ Davis presented his credentials and took up his post as Minister in Hungary on 21 October 1949.

11■ In December 1949, a party and government delegation headed by Mátyás Rákosi went to Moscow to attend the celebrations of Stalin's 70th birthday.

12 ■ Vogeler, after spending a month in hospital recuperating, corrected his first misinterpretable statement, claiming that his earlier words on the truth of his testimony were meant to be ironic.

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Judit Adler–Erzsébet Viszt

Wages and Labour Costs

The study of changes in levels of development and their international comparison has ever come up against serious methodological and practical barriers. International statistical analyses related to per capita GDP and price levels have pointed to a gap in the seventies and eighties between the developed world and the countries of Eastern Europe. This period has been described as one of a delayed stagnation, something that had earlier been obscured to some degree by prettifying the data. Artificially fixed rates of exchange made comparison even more difficult. This was true particularly of work done on purchasing power parity. Recent years have, however, seen a growth in the international statistical data basis. This has made it possible to trace the course of Hungary's catching up with the frontrunners. It is also true that—*pace* the experienced process of convergence—the development levels, average wages and labour costs in EU member countries also differ.*

In the long term the economic development levels in EU member countries tend to converge; a process, observable for some time, has recently accelerated. EU documents stress the importance of this process for backward countries and regions, which is also served by the creation and operation of structural funds. Less developed EU member countries (Spain, Portugal, Greece, formerly also Ireland) grow at a faster rate than average.[1]

Portugal and Spain, which only joined the EU in the mid-eighties, had started to make up some of the leeway much earlier, even before the oil crisis of the mid-seventies and—even after they shifted down a gear—their rate of growth was still higher than the EU average. Ireland on the other hand only initiated dynamic growth in the nineties, well after joining the EU, in the wake of a marked change in economic policy.

An examination of the various stages of development shows that there is no close link between growth and joining the EU, allowing one to conclude that EU membership in itself is not sufficient. Ireland, which achieved membership in 1973, took the greatest steps forward in the nineties,

* Based on research supported by the Ministry of Economics. Publication supported by the Foreign Ministry.

1 ■ The article essentially relies on the OECD statistical data basis. The periodicals *National Outlook* and *Economic Outlook* were consulted in relation to foreign exchange and purchasing power parities used in the comparison of levels of development.

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whereas Portugal and Spain, which joined in 1986, had initiated their growth acceleration back in the sixties. Nevertheless, development levels of EU members have converged in recent decades since the EU can only survive and prosper if great differences between member countries are eliminated.

GDP in a number of EU countries 1960–1998 (EU = 100%)

Country	1960	1973	1990	1998
Italy	88	94	100	102
Ireland	61	59	71	110
Spain	57	75	72	79
Portugal	39	55	60	67
Greece	43	63	57	59
E.U.	100	100	100	100

Source: OECD (1998).

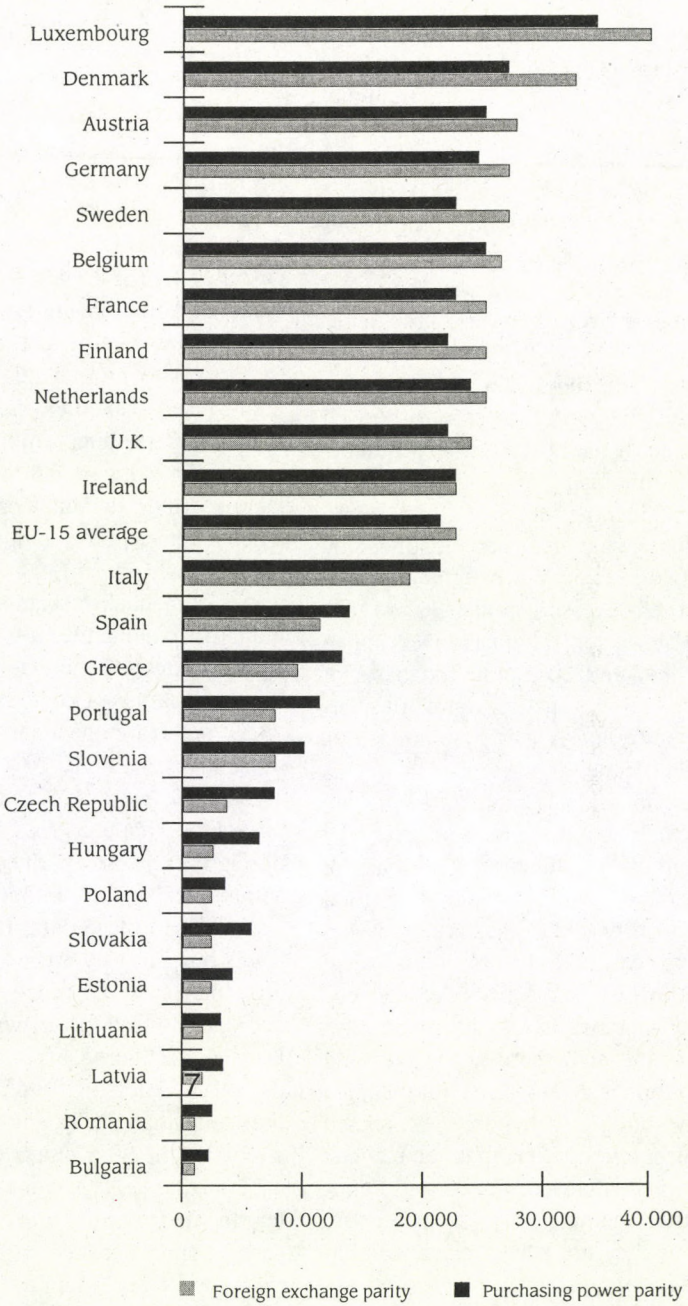
Development levels: increasing divergence in Eastern Europe

It was hoped that the most important economic consequence of the changeover will be an upward adjustment of income levels to those prevailing in the developed countries. In the past ten years, however, the growth pattern in the countries of the former Soviet bloc has shown great differences. Some succeeded in maintaining a course of steady growth, others fell even further behind. As regards per capita GDP, Poland recovered the 1989 level by 1995, something that Slovenia managed to do only in 1998. Albania and Bulgaria, albeit very likely past the nadir, have not even approached the pre-political changes level. The ongoing economic crisis in Russia is manifest in the fact that 1999 GDP is not even 60% that of 1989.

Hungarian GDP grew slowly between 1994 and 1997, and then accellerated after 1997. In 1999 total GDP reached the pre-changes level. However, in spite of the favourable growth rate, there was no improvement in the nineties in the economic situation in comparison with the developed countries. As regards per capita GDP (on the basis of purchasing power parity), it is a third of that of the US, and around half of that of the EU countries. The Polish level is well below that, 61% of the Hungarian figure. The level prevailing in the Czech Republic was 22% higher than in Hungary. Gigantic differences were also present in the other associated countries: the level in Slovenia at the top being three times that of Bulgaria at the bottom. It should be stressed, however, that the scatter is also high within the EU. Wealthiest Luxembourg is two and a half times as rich as Greece, the poorest. But even the poorest EU countries are much richer than Hungary (Spain 1.5 times as rich, Portugal 1.4 times, Greece 1.3 times).

Particularly in the countries in transition, and the less developed EU member-states, there is a considerable difference between comparisons based on foreign exchange rates and those based on purchasing power. There are still significant differences in price levels and price structures between the economies, regardless of major price adjustment processes. The Hungarian relative price level is roughly half of that of the 29 OECD countries which, in turn, is well below that of the least developed EU member country. There are also considerable differencies with the EU: the Scandinavian countries there take the lead, and the price levels in the Iberian countries are, relatively, the lowest. It is true, however, that the calculation of development levels within the EU does not depend as much on which of the two parities are taken as a basis as on the countries awaiting access. In the associated countries, including Hungary, development levels calculated in these two ways tend to get ever closer to each other as a result of the appreciation of the forint in relation to the euro. Hungarian pricelevels are getting ever closer to those prevailing in member countries of the EU.

Fig. 1: Development levels in the EU and in countries awaiting membership on the basis of per capita GDP 1999 (in $)



Source: UN, OECD and Central Bureau of Statistics.

Wages and wage-differences in Hungary and the EU

An improvement in wage levels is crucial for catching up with the EU for two reasons: because of the international competitiveness of the economy and secondly, in view of social welfare and standards of living. Comparative studies bearing in mind international competitiveness tend to be based on exchange rate parities, if, however, welfare is the issue, purchasing power parities are more relevant.

Whatever the approach to Hungarian wage levels, they must be said to be well below those of the EU countries. An international comparison of wages, however, shows that income levels in Hungary are well below what may be justified by levels of development. Average income levels in the processing industries are 11% of the EU level (on the basis of exchange rate parities) and 30% (on the basis of purchasing power parity), and this although per capita GDP is 21% and 50% respectively of the EU average.

One explanation is that, following the changes, making a living became a complicated business in Hungary. The share of wages declined when compared to total incomes. Non-wage incomes are, however, difficult to calculate for both statistical and taxation reasons. A considerable proportion of incomes is left out of account because of the high share of the grey and black economies. Other items not included in family budget data are reimbursed costs, entrepreneurial charges, employers' contributions to pension funds and annuities. Actual income levels are therefore higher, but they are nevertheless well below the development level.

In 1998 OECD first published international comparative data referring to wages and labour costs which included Hungary amongst the 29 OECD countries (*The Tax/benefit...* [1998]). This article includes a numerical comparison—in keeping with a similar methodology—according to a more recent publication (*Taxing Wages* [1999]). The data refer to manual workers in the processing industry, with annual average wages given both in the national currency and in dollars (calculated on the basis of both foreign exchange and purchasing power parities. The account therefore refers to around 20–25% of those in employment—differing from country to country—depending on the share of the processing industry and the productivity of labour. These labour costs are decisive when it comes to the competitiveness of exports. In Hungary, in 1998, the monthly gross wages of manual workers in the processing industry amounted to 109.1% of the average earnings of manual workers in the economy, 58.1% of white collar wages, and 78.3% of the average incomes of the total of those in employment.

Manual workers in the EU earned an average annual gross income $26.575 (foreign exchange parity), of which the Hungarian figure amounts to 11.4%.[2] According to these data, Hungarian wage-levels amount to 9% of German ones and less than 40% of those in Portugal, the country with the lowest wage levels in the EU (Fig. 2). Endre Gács, using similar statistical methods on 1996 data, established that Hungarian wages amounted to around a tenth of the EU average (Gács [1999], *The tax benefit...* [1998]). Our results barely differ. In other words, there was no significant change between 1996 and 1998 in this respect. According to our calculations,

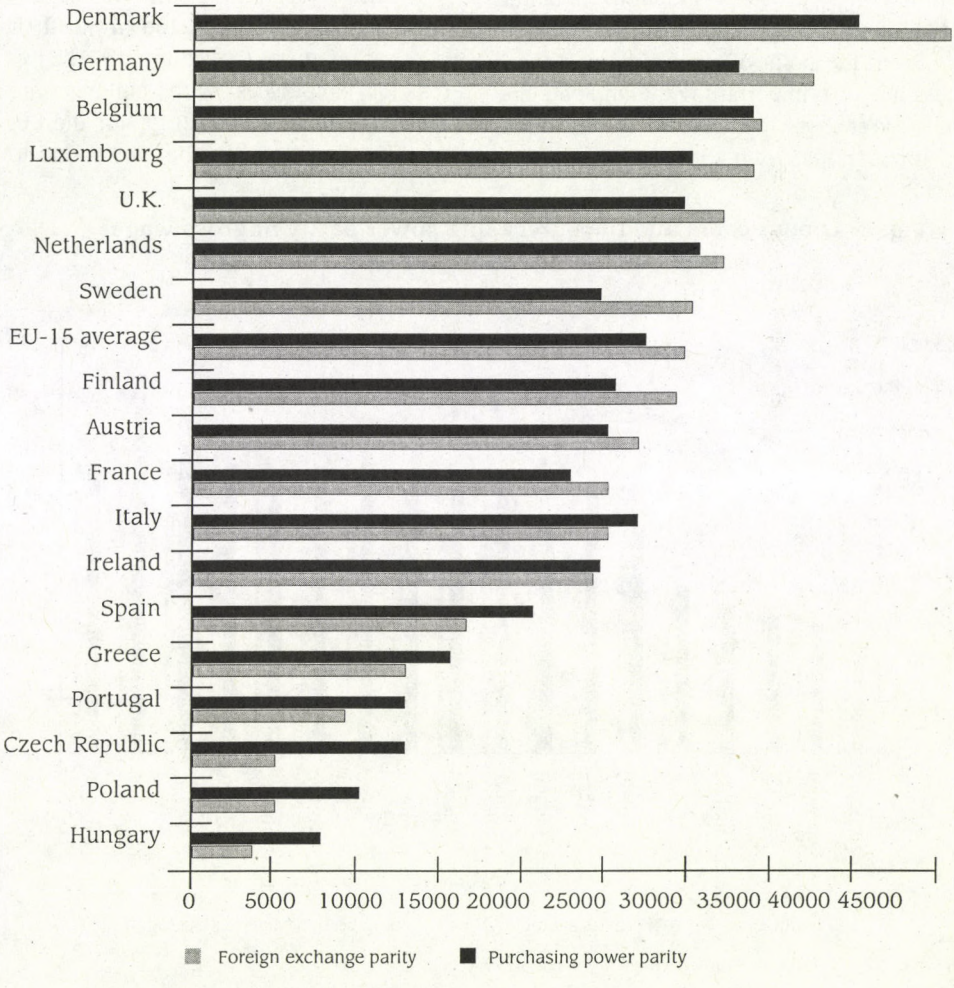
2 ■ EU-15 gross average incomes were calculated on the basis of weights created out of GDP calculated on the basis of purchasing power parity. Source *OECD (2000).*

however, this applies not only to the EU: Hungarian wage levels are only 60 to 70% of those in the Czech Republic or Poland, i.e. of CEFTA countries on a similar developmental level, which are competitors on the world market.

Comparison based on exchange rate parities largely backs the opinion that labour costs of export goods put Hungary in a favourable position. Bearing in mind per capita labour costs, it is clear that processing industry firms are interested in a growth in exports. These figures may well change and not only in keeping with nominal wages in the compared countries. Other factors are consumer prices or exchange rates. As a national currency appreciates, so labour costs increase, and vice versa.

Fig. 2. Per capita annual gross income of manual workers in the processing industries in 15 EU and three associated countries 1998

Source: own calculations based on *Taxing Wages* (1999)



A comparison of labour costs

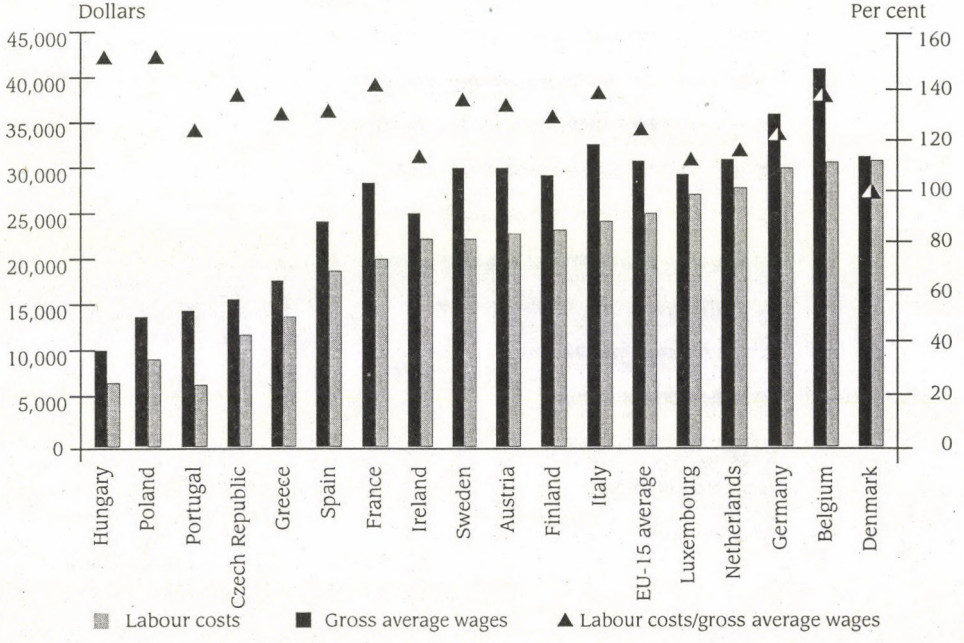
As regards competitiveness on the world market, other labour costs, various charges beyond gross wages (including income tax) are also relevant. In this respect things do not look so good in Hungary. In 1998 employers had to pay 47% compulsory additional charges, principally social insurance. This burden was somewhat reduced in 1999 but is still higher than in the EU countries.

In 1998 the quotient of labour costs and gross wages considerably exceeded that in every country in the EU. Of all the countries in the comparison, the situation in Poland alone is something like the Hungarian.

From the point of view of competitiveness it is also important what kind of compulsory charges to the state are included in gross wages, and to what degree this pushes up wages. Bearing all this in mind, Hungarian labour costs (=purchasing power parity) amounted to 32% of the EU average in 1998 and 71% of the labour costs of Portugal, where they were lowest within the EU. The proportion of charges paid to the state on the basis of wages is much lower in the EU than in Hungary. Nevertheless, competitiveness related to labour costs is more favourable in Hungary than, e.g., in the Czech Republic, where gross wage levels are higher than in Hungary, or in Poland, where higher labour costs than in Hungary are burdened by equally significant charges on wages.

In Hungary employees without dependents have 29.9% deducted from their wages, as against 32.8% in the EU. The figures for employees with children are 12.2% for Hungary and 28.1% for the EU. The difference between the two is due to

Fig. 3: Labour costs and the purchasing power parity of gross wages in $ and their quotient (in %)



Source: own calculations based on *Taxing Wages* (1999)

family allowances. The difference grew even further in 1999 and in 2000, due to the introduction of income tax allowances in the case of children.

Whatever category is used as a base, Hungarian wage levels are no higher than 30% of the EU average. The question is how these low wage levels will affect Hungary's access to the EU, or else at what rate wage levels will rise to EU standards if and when Hungary joins, and how this will affect Hungarian export competitiveness.

It cannot be stressed too much that wage levels differ considerably within the EU, and also that the effect on wages of joining is not unambiguous. Endeavours to join, and joining itself are only limited factors as regards wage levels in particular countries. It would appear that world and regional trade cycles, local traditions and social characteristics primarily determine wages, prices and inflation—which are also interdependent—and not state policy or resulting government action. In countries which joined earlier, the adjustment of prices was much more marked than that of wages.

Thus Portuguese wages are markedly lower than those in developed EU countries, they are no higher than a third of the EU average, if exchange rate parity is taken as the basis of calculations. Spanish wage levels are still significantly below those in countries that joined the community much earlier—such as Ireland, Italy or France, though they have slowly but steadily grown since the seventies. Nor can any rise in wages following EU access be discerned in the countries which joined in 1995. Thus in Finland, right up to 1990, the index of real wages exceeded that of dynamic Germany, then, as a result of the crisis following the collapse of the Soviet economy, wages rose more slowly between 1990 and 1993. Wage levels in Austria were below the EU average before EU access, and that state of affairs continues.

Trends in gross hourly wage rates in industry did not change basically as a result of EU access. This is as true of the Iberian countries which joined in the mid-eighties as of the more highly developed countries (with higher labour costs) which joined in 1995. True, there were small annual swings, but German and Austrian hourly wage rates essentially exceed the wage-levels of EU member countries to the same degree, and the way wages shape in Greece, Spain and Portugal only minimally differs from the general trend.

Minimum wages

The Social Charter—a basic EU document—declares wages that are needed to ensure an honest living to be desirable. Hungary has not so far initialled the paragraphs in the Social Charter which refer to wages, thus the EU is not in a position to make demands concerning wage levels. It is, however, common knowledge that Hungarian minimum wages do not ensure an honest living, and that Hungary is still a long way from the minimum wage/average wage ratio which is customary in the EU. Between 1992 and 1999 mini-mum wages grew by 32%, which is less than the 35% growth in gross average incomes.

In the past ten years in Hungary a dynamic increase in wages and prices led to a roughly 12% decline in real incomes in the economy as a whole. Real incomes have steadily grown since 1997 though the rate of growth has diminished from year to year. According to estimates, labour productivity as projected onto GDP has grown by more than an annual 5% on average between 1992 and 1998, concurrent with a decline in real incomes. The way labour costs shaped, improved competitiveness (Darvas-Simon [1999]).

Minimum wages in Hungary

Data	Monthly amount (forints)	As a percentage of gross average incomes
1.2.1992	8,000	35.8
1.2.1993	9,000	33.1
1 2.1994	10,500	30.9
1.3.1995	12,200	31.4
1.2.1996	14,500	31.0
1.1.1997	17,000	29.7
1.1.1998	19,500	28.8
1.1.1999	22,500	29.1
1.1.2000	25,500	31,8
1.1.2001	40,000	—

Source: Ministry of Labour, Ministry of Economics

Aspects in the differentiation of wages

Since incomes are determined by the interaction of numerous factors—synergistic, antagonistic, mutually weakening—it is well nigh impossible to provide a reliable prediction for the post-EU accession period. Access will prove to be an additional factor the force and direction of which will largely depend on macroeconomic processes.

Between 1992 and 1997 nominal gross wages grew three and a half-fold in the economy as a whole, but this process was accompanied by significant restructuring. It may be trivial but it is true that where wage dynamics were stronger than average, there gross average incomes grew when compared with the national average, and vice versa.

Of the many factors involved the scale of enterprises should be stressed. In industries where there are many small firms in private ownership and where incomes are frequently generated in an illegal form, or else appear as the profits of subcontractors, this affects large firms as well, depressing the level of incomes of those in full-time employment. This is true e.g. in catering, commerce and the building industry. Legal incomes in crisis sectors were also reduced.

Wages in the competitive sphere are decisively determined by market mechanisms; in the state-financed sector, however, economic policy defines the situation. In the nineties wages in the communaly financed sphere declined compared to the average and to the competitive sphere. In 1992 incomes in education fell back by 2% compared to the national economic average, in 1999 this figure amounted to 6%. The corresponding figures for the health services were 12 and 23%. At the beginning of the decade, the central administrative sector was 30% ahead of the market sphere as regards incomes, by 1998 the advantage was a mere 7%. In the communal sphere the advantage as regards wages turned into a disadvantage in the course of the decade. (If, however, central government is left out of account, the advantage of the communal sphere compared to the market was nonexistent even at the beginning of the decade. In the initial stage this meant a falling behind by a mere one percent which, by the end of the decade, had grown to 104% (Ékes [2000]).

These figures do not reflect the distorting effect due to the numerical composition of those employed. Given comparable duties, identical qualifications and experience, "depth analyses" already established a 10–15% difference in incomes between the market and state-financed sphere early in the decade. These lower incomes are in no way justified by the level of qualifications of those employed in communal services. On the contrary, the proportion of white-collar workers (and within that, of those holding tertiary qualifications), is higher there. An explanation might be the growing preponderance of women in these

occupations, which commonly goes with a deterioration of the income situation. (The cause and effect relationship is, of course, the opposite: men avoid badly paid jobs) Within communal services unjustified differences in incomes are due to the status of the job concerned, i.e. whether those employed are permanent public servants, or merely employees in the state sector.

Bearing in mind that in Hungary the majority of those holding tertiary qualifications are state employees or else office holders, the transformation described above—in addition to the weak starting position—contributed to the fact that in 1996—calculated on the basis of purchasing power parity, medical practitioners only earned 10% as much as in the EU countries, the corresponding figure for skilled workers being around 30%.

The income-growth dynamics of the market sphere generally exceeded the growth rate of minimum wages. Average wages declined, they are very low, right now, compared to the EU average (30% in Hungary, and average of 60% in the EU). The 40,000 forint minimum monthly wage introduced at the beginning of 2001 tries to alter this. It, however, was not the natural by-product of economic progress but the fruit of political action.

Incomes in the market sphere are significantly shaped by the presence of foreign operative capital, in particular by that of multinational firms. At the initial stage this very likely boosted wages, later however, in the absence of genuine competition, the effect was to stabilize wages. Favourable effects include relatively stable jobs, "decent" working conditions, and a more developed work ethic. According to OMMK (National Methodological and Labour Centre) surveys, the growing number of foreign-owned and jointly-owned firms by the middle of the decade led to wage advantages in 1999 of 32% for unskilled workers, 59% for skilled workers, 27% for experienced diploma holders, 156% for middle executives and 138% for higher executives. Very high incomes are characteristic of the top executives of multinational firms. Their incomes come closest to those paid by the parent firm.

The position taken in the occupational hierarchy plays a considerable role in the differentation of incomes in Hungary. According to OMKK estimates, the incomes of the infinitesimaly small number of top executives raise the national average annual wage level by 4%.

Income and educational qualifications are closely related. A better education means more money, something that is more in evidence in the market than in the state-financed sphere. The state sector consistently undervalues diplomas, exploiting the fact that those with medical and teaching qualifications, and to some degree also those with qualifications and experience in administration, have difficulties in finding jobs in the market sphere. Competition for labour is limited in the state sector, sometimes it is just about absent, indeed there are areas where, characteristically, there are fewer jobs than people to fill them.

Regional differences considerably grew between 1989 and 1999. In 1989, Central Hungary, the most developed region, enjoyed an income advantage of 8%, and the Northern Great Plain, the most backward, a deficit of 11%. Thus the difference between the two extremes was 19%. By 1999 this gap doubled. The income advantage of Central Hungary more than trebled compared to the average (25%), and the Southern Great Plain in the poorest position showed a deficit of 16%. Thus the difference between the two extreme poles grew to 41 percentage points.

The two frontrunners may have kept their position, but the difference between

them increased. The runner-up, Central Transdanubia, initially showed a deficit of 8 percentage points almost 30 percentage points behind Central Hungary. Western Transdanubia made spectacular progress, moving up from fifth to third place, its position compared to the national economic average nevertheless deteriorated. Southern Transdanubia and Northern Hungary fell around a further 10 percentage points below the national average, and the two Great Plains regions found themselves in an even more disadvantageous position.

Rearrangements were prompted by numerous structural factors. A few will be mentioned by way of example. Much industry employing lowly paid unskilled workers was relocated from Budapest and its environs, being replaced by financial services and the regional head offices of financial, servicing and industrial multinationals, all offering well paid jobs. The central state administration, also offering relatively high incomes, also gained ground. Productive capacities of the multinationals were largely located in Central and Western Transdanubia. On the other hand, mining and metal work, which had earlier provided high wages for hard work done in difficult conditions, was largely dismantled, and only modest income-boosting dynamics were possible on the Great Plain because of the joint crisis in industry and agriculture.

Labour shortages, wherever they may occur, boost wages, and are thus repeatedly effective in the differentiation of incomes.

The role of trade unions in wage formation

An interests reconciliation council (ÉT) was established at the time of the political changes. The government, employers and employees are all represented in it. As a rule yearly agreements of an advisory character were concluded on average wage increases and minimum wages in the market sphere. The initial proposal regarding average wage increases is made by the government representative, and that concerning the minimum wage by the representative of employees. The latter was pro-

Gross average wages according to educational qualifications 1999

Highest educational standard reached	Market sphere	State financed sphere	The economy as a whole
	average incomes as a percentage of the national economic average		
Eight classes of general school or less	66.4	52.3	61.9
Trade school	79.3	61.5	77.0
Technical secondary	107.7	75.7	96.9
Academic secondary	107.4	80.3	97.4
Technical college	131.9	105.7	130.0
College	209.1	105.9	136.0
University	307.5	160.3	220.8
Total	**105.0**	**90.0**	**100.0**

Source: Survey of personal incomes. Welfare and Family Ministry 1999

claimed by the government with the force of law, but only if the representatives of employers and employees could reach a compromise; in its absence minimum wages remain as they were. In recent years there were changes so that the ÉT can no longer put obstacles in the way of government policy. As a result the government, acting on its own, was able to raise the minimum wage in 2000.

Agreement on average growth in incomes was not reached every year. ÉT agreements proved to be "soft". On the one hand the market generally exceeded the wage increases recommended in the agreements, on the other hand many were not even paid the legal minimum wage. The multinationals were not represented on ÉT nor did they take much note of its recommendations.

The trade unions had difficulties in finding their role in the post-changes structures. They were largely occupied with their own domestic problems and neglected the representation of workers' interests, nor did growing unemployment and the scale of redundancies favour their position. Largely for these reasons central agreements on wages led to only few and insignificant collective agreements related to particular firms or industries. Numerous firms operate without either middle-level wage determinations or collective agreements. Railway unions are the only ones which regularly organize major strikes to back wage demands.

Wage increases in state-financed institutions are strictly regulated by budgetary prescriptions. Furthermore, decisions are taken as part of the parliamentary debate of the budget. In the past ten years trade unions have not had a real role in the determination of wages where market forces operate, and this is even more true of the state sector. Their rights and scope in recent years were hemmed in by both the administration and employers.

Factors determining incomes after EU accession

The experience of countries with low income levels that joined the EU earlier does not offer much of a guide since it provides a pretty mixed picture. In some the gap (according to exchange rate parity) continued, in others there was a spectacular narrowing in the initial years. It is difficult to decide whether the fact of joining prompted such a spectacular catching up effect, or if other factors were at work, such as favourable trade cycle aspects or other processes that kick-started the modernization of the economy. It is also true that, in the majority of the countries, the catching up following access ground to a halt after a time, indeed there was a propensity of falling further behind, compared to the EU average. In any event, it must be borne in mind that international and domestic economic characteristics have changed in the meantime, that the access of countries joining in the future will take place in a world economic situation basically different from the one which prevailed at the time of earlier extensions.

In what follows, an attempt will be made to account for those factors which will influence the income situation in Hungary in a future that will include the period around the expected EU access.

1 ■ Increases in real incomes amounting to half the growth in GDP volume figured in earlier plans by the administration. Taking this as a basis, the 5–6% growth in GDP, which figures in the optimistic variants, entails a 2.5–3% annual growth in real incomes. Current experience, however, suggests caution. A favourable GDP situation does not automatically create conditions which make a growth in real incomes possible. Real incomes in the

economy as a whole grew by around 1% at a time when GDP growth was over 5%.

The Hungarian economy was able to progress in recent years in a relatively favourable global economic climate, where advantageous energy and food prices were of crucial importance. This helped keep down inflation and slow the rate of growth of nominal incomes. Unfavourable changes can be discerned in this field, which throw into doubt other necessary conditions of a growth in real incomes.

2 ■ When preparing the budget the government promised a minimum wage of 40,000 forints a month for 2001 and of 50,000 forints for 2002. According to expert estimates, a 40,000 forint minimum wage, while maintaining current wage differentials, would lead to an extra outflow on wages amounting to around 300,000 million forints. It is not clear where this money would come from, particularly in the state sphere.

A distortion in income differentials, with less weight being given to qualifications and experience and the revival of equality as a slogan, may well lead to a recurrence of performance problems which Socialism has made us familiar with. Amongst some highly skilled professional people this may well stengthen a penchant to leave the country at a time when Hungary too has great need of cultivated heads. It is difficult to move over into an information society based on knowledge given rewards that are close to minimum wages.

Such a large rise in minimum wages leads to a significant growth in effective demand, moderating the present considerable difference between minimum wages and average income. The market will, however, very likely dodge such payments (arranging dargs, apparently part-time employment, uneven employment periods within a year, subcontracting etc.). In the state sphere the rise in minimum wages will further increase tensions that are already far from negligible, since it will make it impossible to give others a rise.

3 ■ In the years immediately before and after EU access, a general rise in wage levels affecting the economy as a whole will probably occur. The labour-cost competitiveness of the Hungarian economy will continue, although this advantage compared to the EU average will grow smaller. Wage rises will probably be largest in industry, in the health services, and in education. In the following ten years the economy will still be an industrial one, therefore incomes expected to be earned in industry will still be of outstanding importance. Within industry the multinationals will act as the motor, their presence will grow moderately, interchanges will, however, accelerate. According to certain surveys, the labour costs of those employed by multinationals are 30% of those that prevail in their home countries, performance, however, is 50 to 60%. The multinationals will very likely only raise real wages if performance also improves.

It must be presumed that a growing proportion of small and middling firms are able to raise their performance. Reducing taxes and charges of various kinds will probably lead to a larger than average rise in legal incomes in this sphere. In the building industry, commerce and agriculture, incomes may well grow as the share of the black and grey economy declines, but they certainly cannot reckon with a higher than average growth in incomes. In financial services, particularly as regards management and executives, incomes are high in relation to performance. One must therefore reckon with a slowing down of the growth rate. In education and in the health services a general and significant rise in incomes is probably unavoidable even before accession. If this does not happen there is every reason to fear that

qualified personnel, e.g. young doctors, will look for better paid positions in EU countries.

4 ■ In the next ten years there is little chance of lessening regional income differences within the country. The best one can hope is that the scissor will not open even wider. These regional differences will continue since there is an ongoing connection between higher incomes and better qualifications. Attention should be drawn to two problems. On the one hand, according to registration figures, half of the affected cohorts receive a tertiary education. It must therefore be taken to be a mass phenomenon. Training, however, is becoming differentiated and it must be presumed that pay rates will not give much weight to accredited forms of training and university, and to some degree college, diplomas will continue to be reckoned truly wage-boosting factors. Those with higher qualifications, on their part, will continue to look for jobs in the more developed regions of the country.

5 ■ The effect of gender-related pay differentials should also be mentioned. Though the Social Charter prohibits such discrimination, we know that it still goes on, and the most we can hope for is that it will grow smaller. Raising the retirement threshold to a uniform 62 years means that in the future the proportion of older women will grow amongst those employed, which will, very likely, depress income levels. The fact that, in younger cohorts, women are better qualified than men, may contribute to a reduction of inter-gender income differences, particularly because it is expected that a large proportion of young women will go into business.

The gap between Hungarian and average EU income levels is greater than as regards respective GDPs. (The same is true, within the EU, for France and Portugal, but there the scale of backwardness is smaller). Calculated on an exchange rate basis Hungarian incomes amount to 10% of the EU average, only 30% given purchasing power parity. Labour costs that include all charges borne by employers amount to around 40% of the EU average calculated on the basis of purchasing power parity. Improved performance alone will not produce higher wages. Other conditions are lower charges on live labour and a growth of the ratio of wages within total employees' incomes which, at present, are made up of many differing elements. Lower charges on wages must not imply any threat to the financing of public expendigture, therefore such charges can only be reduced if economic growth creates the necessary resources, or else if the black and grey economies diminish and more people contribute to the exchequer. This can be achieved by boosting the ratio of legally performed work.

The EU does not prescribe the wage levels of associated future member countries, the less so since EU competitiveness is boosted by lower average wages. If one adds that these low wages are paid to a relatively well qualified labour force, this implies a double advantage for the EU as an integrated market.

The relatively low level of wages is at the same time a disadvantage for the EU, since it reduces domestic purchasing power. Large differences in wage levels produce various kinds of social tensions. In some count-ries unemployment is high. Trades unions which protect jobs and wages are powerful there. Taking Spain and Portugal as an example, 60 to 70% of EU wage levels is acceptable for a country at the time of joining. There is, however, no formal prescription of any sort in this respect, nor is there any evidence that migration may be closely connected with wage levels.

In Hungary the GDP growth rate is considerably higher than the EU average; the

number of those employed will, however, not increase by much. Productivity in the economy as such and in the processing industry will not grow at the fast rate experienced since 1993, but still faster than the EU average. This will lay the foundations for a relatively dynamic growth rate in real incomes.

Foreign and domestic pressure to raise wages will certainly grow as part of approaching the EU. The demand for upward levelling will get stronger in wage disputes. Furthermore, if average wages in Hungary and the EU differ too much at the time of joining, there may well be a request to limit the mobility of Hungarian labour. In addition, EU policy prescribes that minimum wages must amount to at least 68% of average wages. Starting with 2001 this ratio will amount to 40 to 45% .

Even if conditions of access made it possible, it is unlikely that any large number of Hungarians will seek work abroad. A differing employment structure and the minimal knowledge of foreign languages on the part of Hungarians act as barriers.

At this moment it is difficult to predict what the effect of EU access will be on wages in the state financed sphere, primarily in education and the health services. For domestic reasons too major pay rises can be expected there.

Hungarian wages are low by international standards, something which justifies raising them. This, however, will unfavourably effect the comptetitiveness of the Hungarian economy. This could to some degree be counterbalanced by the government if charges paid by employers and employees were reduced. Since the differences in wage levels are, however, great, the advantages in competitiveness due to low wages are likely to persist for some time, bearing in mind how long a process the upward levelling of wages is. There is no doubt, however, that the competitiveness of those firms will improve in the future which will be capable of revaluating competitive strategies based on low wages, placing greater emphasis on other factors, such as state of the art technologies, and an improvement of human resources, employing modern management techniques etc., also adjusting to the fact that the scope of price strategies will be more restricted. ❧

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Pál Lővei

Millennial Exhibitions

(Part Two)

Exhibitions of a distinctly architectural character are relatively new in Hungary: even the most spectacular of such fail to draw large crowds. Yet, for the profession they are of great significance, and their catalogues have become essential sources for research. The work of several 19th century Hungarian architects has been celebrated in recent years: in 1984 an exhibition was devoted to the most important figure of Hungarian Romantic architecture, Frigyes Feszl (1821–1884), another in 1991 and 1992 to the important historicist architect (of the Budapest Opera House), Miklós Ybl (1814–1891), and in 1996 the architect of the Museum of Fine Arts, Albert Schickedanz (1846–1915) was featured. All these large-scale exhibitions required years of preparatory work.

Alongside exhibitions devoted to architects, there were some that treated the design and construction of particular buildings. In 1996, documents pertaining to the 1861 competition for a design for the Hungarian Academy of Sciences were exhibited. The splendid exhibition the Museum of Fine Arts arranged in 2000 was of the same kind, its subject being (much in line with what the Millennium connotes for Hungarians) the symbol of the Hungarian state, the former and present buildings which have housed Parliament in Budapest. The concept was Eszter Gábor's, and she did the bulk of the organization as well.

Surprisingly enough, the first building to house the Hungarian National Assembly was erected in 1784 in Buda, on the orders of Joseph II, the monarch who never convened parliament. It was a building formerly owned by the Poor Clares, dissolved by the monarch in 1782, that was converted to create the chambers for the two houses, to the design of Franz Anton Hillebrandt (1719–1797). (The building, now housing several research institutes of the Hungarian Academy of Sciences, still stands in Régi Országház utca.) The idea of a self-contained imposing building occurred only later, at the urging of provincial representatives, who from 1830 on wanted Parliament to move from Pozsony (Bratislava),

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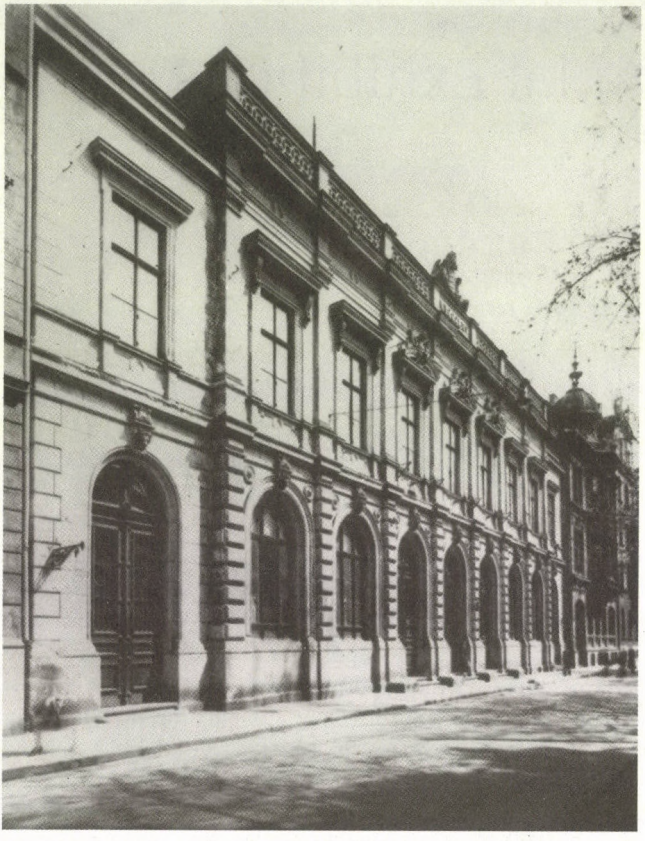
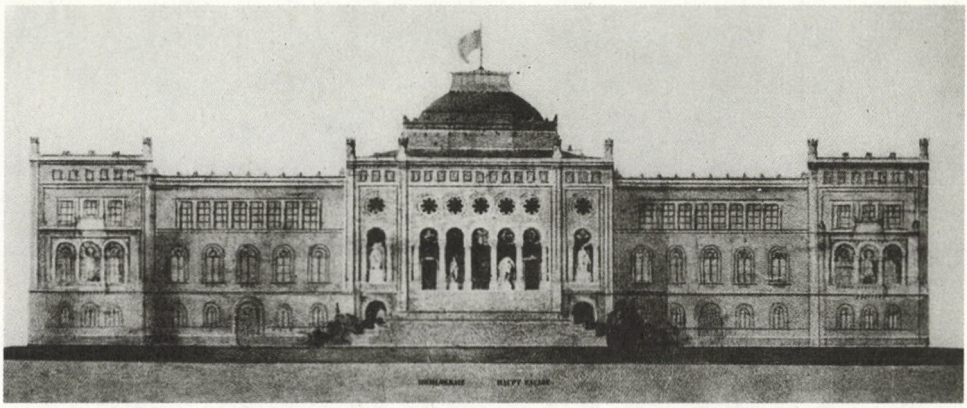


Budapest, Bródy Sándor utca 8. Designed by Miklós Ybl, 1865. Formerly the temporary location of the House of Representatives, now the Italian Cultural Institute.

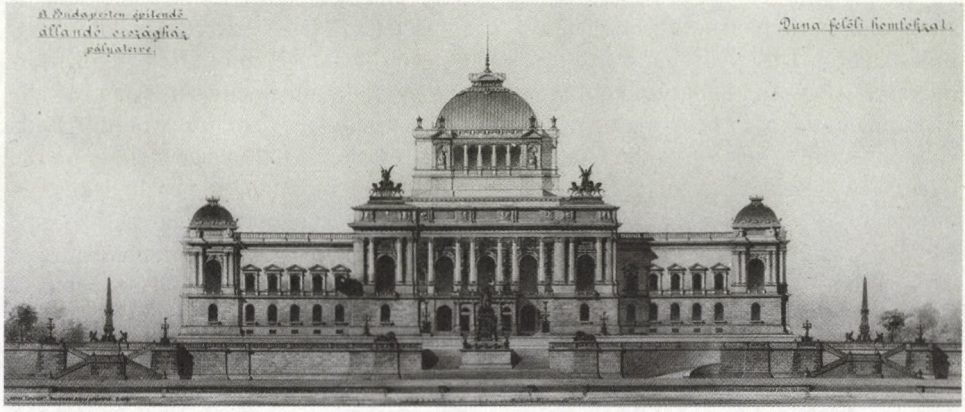
near Vienna, to Pest. Around 1840 the leading Neo-Classical architect Mihály Pollack (1773–1855), who had designed the National Museum, prepared a design, whose Neo-Renaissance details were quite uncharacteristic of him. An international competition was announced in 1844.

The winner was never declared, due to an increasingly tense political situation which was to culminate in the 1848–49 Revolution and War of Independence, a situation which was hardly encouraging for construction. During the ensuing repression and direct Austrian rule, some of the competitors asked for their designs to be returned, notes on which are now the main source of information about them. None of the 42 entries are extant (a description and analysis of them, based on available sources, is printed in the exhibition catalogue, as part Dénes Komárik's article); the three designs that are now exhibited were not submitted at the time for various reasons. Frigyes Feszl's design (apart from one sheet it has survived only as photocopied) was an early example of Romanticism in Hungary. Wilhelm Stier (1799– 1856), who taught at the Berlin Academy of Architecture, planned an immoderately large building, with Gothic details of fantastic richness, and spectacular, complex outlines. The drawings were borrowed from the Berlin Technische Universität, and this was the first time they were seen in the city they were intended for; some of them are unfinished, which shows they did not meet the deadline.

Two young Austrian architects, Eduard van der Nüll (1822–1868) and August von Sicardsburg (1813–1868), who later made their names with buildings on the Vienna Ring, found the terms of the competition vague, and produced only a ground plan and a frontal elevation, which they later published. The original drawings were not lent by the Albertina of Vienna, with the somewhat lame excuse that the institution is undergoing reconstruction.



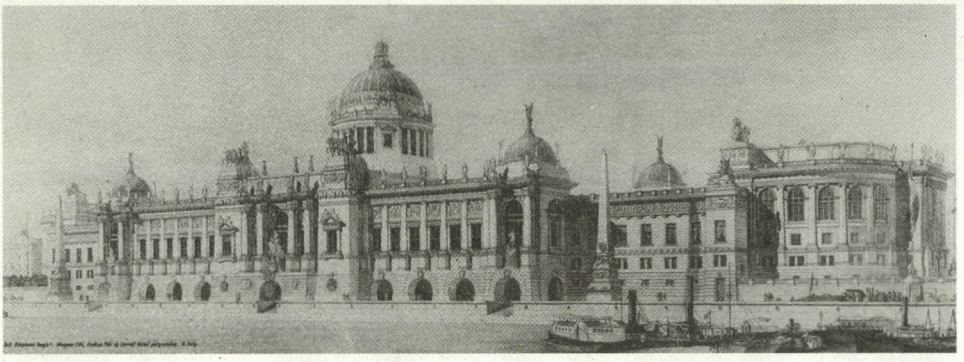
Frigyes Feszl: A design for Parliament, 1844–45.
(In the possession of the Hungarian Parliament)



Alajos Hauszmann: Design submitted for the Parliament competition.
Western (Danube) façade 1882–83.

In 1859 Austria lost a war in Italy. With the resulting thaw in domestic politics—the Hungarian National Assembly was convened in 1861—the construction of a temporary home for the assembly in Pest was mooted again. Only a fraction of the designs known to have existed have survived, some of which were identified only during preparatory work for this exhibition. Striking among them is a design by the Swiss-born ironworks owner Ábrahám Ganz (1814—1867), which, according to a contemporary news item, was meant "to be constructed exclusively of iron"; the plan was saved from destruction through skilful restoration work at the National Archives.

As an indication of growing stability on the political scene and as a prelude to the 1867 Austro-Hungarian Compromise, Parliament was convened in 1865. The main hall of the National Museum was deemed suitable for the Upper House. Miklós Ybl was commissioned to design a new building for the House of Representatives, which was built across the street from the

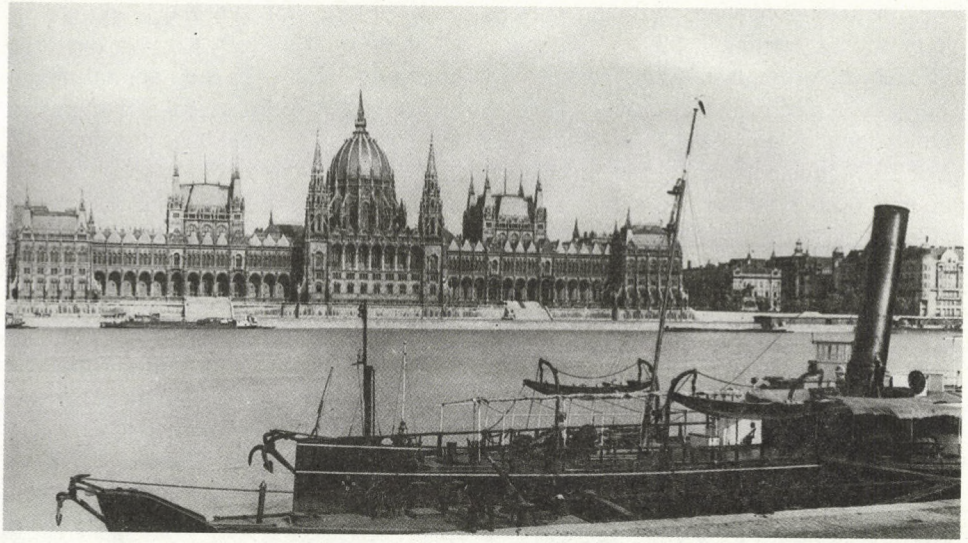


Otto Wagner–Rezső Berndt–Mór Kallina: Design submitted for the Parliament competition. Danube bank prospect. 1882–83. (In the possession of the Hungarian Parliament.)

Museum. The fine Neo-Renaissance building was constructed in a few months, and still stands, now housing the Italian Cultural Institute. This, with the town houses that were soon after built around it, comprises one of the city's beauty spots.

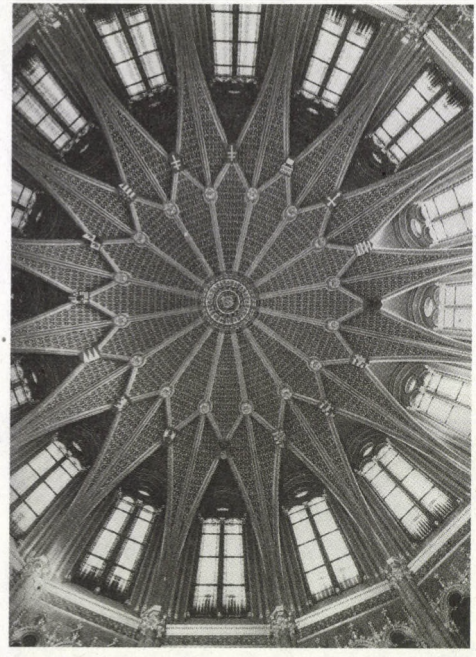
Though this home of the National Assembly was meant to be temporary from the start, a long time passed before a final solution was hit upon. The competition was announced only in 1883; the site was in a partly undeveloped section of the city on the riverbank, between the first two permanent bridges across the Danube. The story and the plans of the building are related in the catalogue by Eszter Gábor, whose discussion is based on a thorough study of the sources.[1] Twenty plans were submitted, far fewer than expected (there were, for example, 189 entries in the 1882 competition for the Berlin Reichstag). Ten of them have survived, in part or in full, as well as in contemporary photographs; these are now in the Parliament Library, the National Archives and the Budapest Historical Museum. Among them are the four award-winning plans—two by teachers at the Budapest Technical University, Imre Steindl (1839–1902) and Alajos Hauszmann (designer of the building now housing the Museum of Ethnography, formerly the Supreme Court, and of the above-mentioned extension of the Buda Castle); one was Otto Wagner (1841–1918), the designer of the Rumbach Sebestyén Street synagogue in Pest, who later became an early herald of modern architecture in Vienna; another was by Albert Schickedanz, who submitted a joint entry with Vilmos Freund (1846–1922). Two designs were bought, one by the Viennese duo Ferdinand Fellner (1847–1916) and Hermann Helmer (1849–1919), known all over the Austro-Hungarian Empire for their theatre buildings, and the other by Emil Förster (1838–1909), also from Vienna. There were long debates over the style to be adopted for the building, and it was eventually Steindl's Neo-Gothic design that prevailed over the other, dominantly Neo-Renaissance, plans. Steindl took over quite a few details, parts of the ground plan and functional solutions from the other entries (he was compelled to do

1 ■ *Az Ország Háza. Buda-pesti országháza tervek 1784–1884* (The House of the Nation. Parliament Plans for Buda-Pest 1784–1884) Exhibition mounted in the Museum of Fine Arts and arranged by the Hungarian Parliament, the Hungarian National Archives and the Museum of Fine Arts. Catalogue. Eszter Gábor and Mária Verő, eds. Budapest, 2000, 435 pp.



Budapest Parliament as seen fron the Danube (A pre-War photograph)

so by those who commissioned him) and the planning process, examined in the catalogue by József Sisa, was not finished until 1888, when the concrete foundation, (essential because of the waterlogged soil) was finished. Construction and the furnishing of the interior lasted until 1904, and the architect did not live to see the completion of his grandiose building, a true symbol of Budapest.



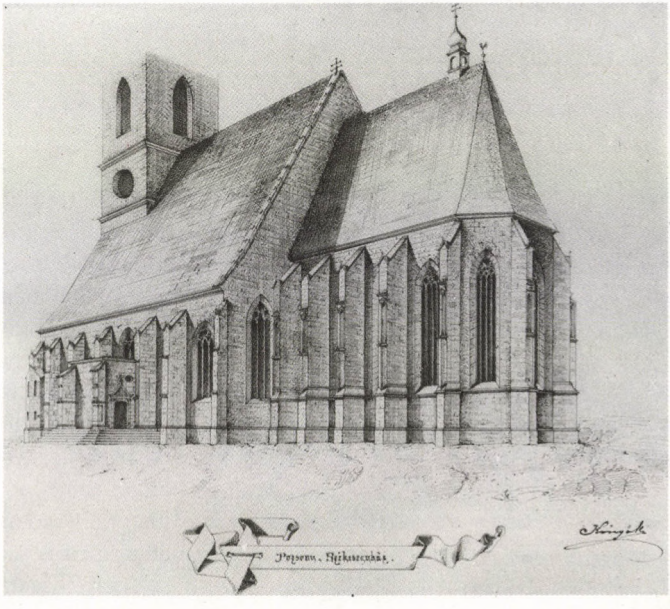
The vaulting of the dome of the Budapest Parliament.

The exhibition closed with a series of spectacular watercolours which Lipót Rauscher made in 1899–1900, commissioned by Parliament for the 1900 Paris World Fair.

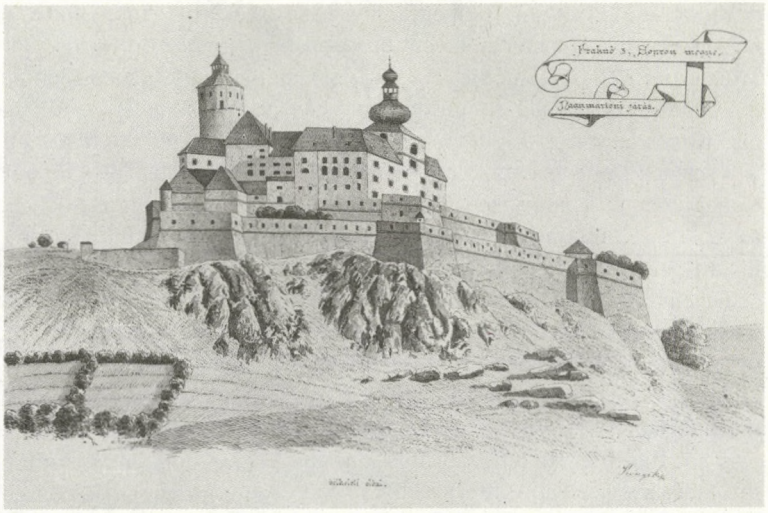
At the time the Parliament was designed and constructed, the institutional framework for preserving monuments started to gain shape. Imre Steindl took active part in this process as an important member of the Temporary Committee for Monuments, formed in 1872, and then of the National Committee, set up in 1881, as directed by a new Act on Monuments. He was responsible for the purist reconstruction of historic buildings, among them the Gothic church of St Elizabeth in Kassa (Košice). A fairly accurate history of Hungarian

monument conservation could be drawn up by simply referring to the ever-expanding archives of the institutions actually in charge of it. The body presently in charge, the National Board for the Protection of Historic Monuments, has done much for the past decade for the scholarly processing of the systematically developed collections of plans, photographs, books and documents—a corpus essential for the solution of problems today's conservers have to face. Survey sketches from the early periods of conservation, and then photographs from the end of the 19th century on, are often of great interest even to the general public, consequently exhibitions well serve not only the purposes of processing and publication, but of publicity as well.

In 2000 the exhibition was on the work of two art teachers: Viktor Myskovszky (1838–1909) from Kassa (Košice) and József Könyöki (1829–1900) from Pozsony (Bratislava); both were associate members of the National Committee for Monuments, amateurs with an interest in the architectural heritage, who sent their reports from all parts of the country.[2] It was they who filled in the forms of the national monument register in process of formation, often contributing their own drawings and photographs. They both worked in the north of Hungary, especially in what is Slovakia now, Könyöki to the west, Myskovszky in the middle and to the east. Könyöki also made occasional tours south-west of the Danube, including areas now part of the Burgenland in Austria, and the south-east of Slovenia. He was especially interested in castles and castle ruins, and published quite a few articles on them, while Myskovszky was fascinated, more than his contemporaries, with what survived of Renaissance Hungary. In view of their enthusiasm, the way they were treated at the end of the 1880's was unfair: regular members of the Committee, with Imre Steindl at their head, claimed the drawings by the two teachers were not accurate enough, and let looks dominate at the expense of the information necessary for architectural reconstruction. The critics



József Könyöki: Saint Martin's Church in Pozsony (Pressburg-Bratislava) from the south-east. National Board for the Protection of Historical Monuments Design Archives



József Könyöki: Forchtenstein (Fraknó) Castle. National Board for the Protection of Historical Monuments Design Archives

also thought a specialized institute would need local associate members less than employees with technical qualifications. The criticism was not groundless, but it was made insensitively. It had its effect: Könyöki ceased all relations with the Committee, and Myskovszky soon retired. Their drawings today are considered prized jewels in all archives, their watercolours and ink drawings are popular pieces for illustration and exhibition—just like other watercolours, almost five hundred in number, made after medieval murals by the first generation of Hungarian mural restorers, who were also art teachers by training. The sheets also have great documentary value, as they are the primary sources on the former conditions of buildings and their interiors. Recourse to them is essential for restoration work done today. But only if those in the profession are aware of them, which is why modern catalogues are needed.[3] For the exhibition, all drawings by Könyöki were processed, and the Myskovszky heritage is also to be published soon. Those most eager to have the volumes are of course those responsible for monument protection in Slovakia, who already placed great hopes in the collected oeuvre of Kornél Divald, they even contributed to it. On the anniversary of Viktor Myskovszky's death, a joint Slovak-Hungarian exhibition and conference was organized in Bártfa (Bardejov), after which a volume of studies was published in cooperation.

One of the most colourful millennial programmes was an exhibition in the Műcsarnok in Budapest, organized by László Beke and Judit Angel: "Intuition, In-

2 ■ *Az örökség hagyományozói. Könyöki József és Myskovszky Viktor műemlékfelmérései.* Kiállítás az Országos Műemlékvédelmi Hivatal aulájában 2000. szeptember 21-tôl. A vezetőt összeállította: Granasztóiné Györffy Katalin, Váliné Pogány Jolán. (Guardians of Hungary's Heritage. József Könyöki and Viktor Myskovszky's Drawings of Historic Monuments. Exhibition in the aula of the National Board for the Protection of Historic Monuments). Introduction compiled by Katalin Györffy Granasztói, Jolán Pogány Váli. 20 pp.

3 ■ *Az örökség hagyományozása. Könyöki József műemlékfelmérései* 1869—1890. (Perpetuating the Heritage of József Könyöki's Drawings of Ancient Monuments.) Ed. by Jolán Pogány. Országos Műemlékvédelmi Hivatal, 2000, 374 pp.

novation and Invention. Hungarian Scientific Discoveries, Technical Inventions and Artistic Innovations." As the title suggests, the organizers wished to present special discoveries and epoch-making inventions in science and economics made by Hungarians, at least those that lend themselves to exhibition. Preliminary research in art history has brought into focus achievements in industrial design as well as such works of art from the last decades of the 20th century that at the time of their creation were thought novel because of their formal or technical solutions. This was not the first exhibition of this kind in the Műcsarnok: "The Butterfly Effect" and "Perspective" were only two of popular shows in recent years. And it most probably will not be the last, as a planned major exhibition in the Millennial Park, a large exhibition space converted from the buildings of the Ganz factory, due to be opened in the autumn of 2001, is said to aim at representing the creativity of Hungarians, a show of which "Intuition..." is a forerunner.

The earliest work displayed was a 1473 copy of the *Chronica Hungarorum,* printed in the Buda printing office of András Hess. (This short-lived press was probably the sixth in Europe.) Beside some other important books from the 17th and 18th centuries, mostly on technical themes, the bulk of the material exhibited came from the last 150 years.

The section "Industrial and Agricultural Machines" featured Ábrahám Ganz's hardcasting wheel, known all over the world; Mechwart's rollers, which revived the milling industry; Donát Bánki and János Csonka's carburettor, and other early inventions for motor vehicles; Heller and Forgó's cooling tower (or rather, a model of it), which was awarded a Grand Prix at the 1958 Brussels World Fair; and Kühne's corn sheller. Among them stood works by the artist Imre Bukta, including his 1975 "Thresher Converting Plastic into Corn" (at the 1999 Venice Biennial he exhibited his corn statues), and Viktor Lois's giant acoustic statue made up of machine parts. Manuscripts by János Bolyai, one of the founders of non-Euclidean geometry, were on show. In the section called "Computers, Informatics" were exhibited letters by John von Neumann, who is considered the father of the computer; the logic machine of László Kalmár, an important member of the Szeged school of mathematics, a leading theoretician of mathematical logic and computers, along with early achievements in Hungarian research into computing technique. Displayed beside them were paintings by Victor Vasarely and the lesser known Gyula Tichy (1879–1920); the Art Nouveau-style images of the latter include mysterious war machinery, the strange adventures of Hungarian travellers and other fantastic scenes and events.

In the hall devoted to architecture, developers of the practical and artistic use of reinforced concrete were presented: plans by István Medgyaszay (1877–1959) and Béla Sámsondi Kiss (1899–1972), as were plans by three people who are still active, Bálint Nagy, László Rajk and Dezső Ekler. The design section featured Marcell Breuer's armchair (1902–1981), furniture designs by one of the most important architects of the period between the wars, Lajos Kozma (1884–1948), models of Ikarus buses and their emblems, formerly best-selling radios and television sets from the Orion and Videoton works, László Biró's ballpoint pen, and ceramics from the Zsolnay works, Pécs. In the section "Electricity, Magnetism", science was represented by Imre Bródy's krypton-filled light bulb, Ányos Jedlik's dynamo, a transformer by the Zipernovszky-Déri-Bláthy trio, the electron multiplier by Zoltán Bay, who was among the first to

measure the distance of the Moon from Earth by radar; the artists were Nicolas Schöffer and István Haraszty—the latter's mobile constructions are kept in motion by electricity. In the next section early inventions in optics and achievements in astronomy were paired with motion studies by Bertalan Székely (1835–1910), a hologram by Denis Gabor, and photograms by László Moholy-Nagy and György Kepes. Also present were Rubik's Cube, Loránd Eötvös's torsion balance, many products of Hungarian pharmacology, Asbóth's helicopter, András Böröcz's grim sculpture composition, "The Hanged Ones," with its inseparable music, and János Megyik's study in the geometric rules of space.

Visitors to the exhibition could see the project documentation of János Herner and István Janáky's work, "Time Wheel." This giant hour glass, to be made of red granite and bullet-proof glass, mounted on a shining steel structure, was meant to be placed on a railway track laid down by the City Park in Budapest, to celebrate the Millennium. Plastic granules would have dripped from the upper container into the lower one in the course of a year, at the end of which the structure would have been turned upside down, travelling a few metres on the track. Hundreds of new millennial monuments were supported by the state and local governments; these at best were mediocre and usually totally valueless, with many anachronistic statues of St Stephen and St Ladislas not worth the bronze or stone they are made of. (A surprisingly first-rate counterexample, a stone-glass "Time Gate" will be built in Veszprém.) The "Time Wheel" would have deserved all support; it would have been a real spectacle, a specialty of Budapest—unfortunately, it failed to impress the politicians who hold the purse strings.

A new exhibition opened at the Museum of Ethnography at the very end of 2000, at 11 p.m., 31 December. Its title,—"Időképek" (Images of Time), suggests a broad theme, and this large exhibition, occupying two stories of the museum, examined the most varied conceptual, historical, ethnographic and social peculiarities of time; how man tries to come to terms with the experience of time as a continuity, recurrence and rhythm. The exhibition was of course based on the material of the museum, various gems of Hungarian ethnography, relics of Asian hunting and fishing peoples, results of late-19th and early-20th century collection tours in Asia and Oceania, new artefacts from Africa and the latest acquisitions from Latin America and Tunisia. Some exhibits were borrowed from other museums, such as the Museum of Fine Arts, the Museum of Applied Arts and the Christian Museum of Esztergom ; private collectors also contributed to the success of the show. Beside ethnographic and artistic objects, an important role was given to images and music as well, as in the sections "Musical Time", "The Time of the Shamans" and "The Time of Transition", the latter being the representation of a four-day Berber wedding ceremony. The introductory section, "Chronos and Tempus" featured a mobile "Wheel" by Attila Csörgő (an artist exhibiting at the 1999 Venice Biennial), whose permanently rotating bicycle wheel allowed a wide range of associations from the cyclic nature of time through the dial of a clock to the medieval Wheel of Fortune.

The exhibits were divided into thirty sections by a large team working to Zoltán Fejős's concept. In the section "The Mystery of Time", you could see works of "high" art: a Dutch *vanitas* still life from about 1670; the allegoric figure of time in a ceramic sculpture from the Holics manufactory, from the second half of the 18th

century; a tapestry depicting the triumphal march of time, probably made in Brussels around 1510–1520; and the allegory of Transience and Eternity in the bone and wood sculpture of Simon Troger of Munich, from around 1740. The section "Family Life, Descent" included as varied objects as an odd early Baroque example of the Tree of Jesse, representing the descent of Jesus, on the Jesse altar in Gyöngyöspata (presented here on a slide); the family tree of the Károlyis (1698), as a specimen of aristocratic family trees which followed the model of Jesus' family tree; or what can be considered its peasant imitation, a 1930 family tree painted on a dish, from Hódmezővásárhely; several massive carved and painted sculptures of ancestors from what was once German New Guinea (Papua-New Guinea) and the Bismarck Islands, from around 1900; a family tree carved out of a single trunk in the 1970s in Tanzania; the family tree of the prophets printed in 2000 on the island of Djerba, Tunisia; or an embroider-ed tapestry from the 1990s, depicting the family tree of the Bamum kings. "Tribal Time" was represented by winter fur clothes and thin summer fish skin apparel from the Amur River basin, and accessories for celebrations, especially of the winter bear feast. The section "Time of Peoples, Time of Nations" contained 18th and 19th-century folk art relics and guild jugs with the arms of Hungary, walking sticks carved with images depicting historical events. In the middle of the room was a round section from the trunk of a more than 300-year old tree which died in 1952, in which the rings of a few important historical events were marked. In "Millennium, Last Judgement, Turn of the Century" the Last Judgement was illustrated by icon-like paintings from the original decoration of 17th and 18th-century wooden churches in Eastern Hungary, and items of folk embroidery which were originally exhibited at the 1885 National and the 1896 Millennial Exhibitions. "The Time of the Earth" was presented through spectacular fossils and world maps from different ages. "The Time of Eternity—Time Reckoning, Calendars" featured a rich and varied selection of calendars, clocks, astronomic instruments, bells and printed calendars from all ages and localities. The idea of "The Museum as Time Machine" was very special, as it documented the time preserving function of museum collections, the act of collecting itself being dependent on time—the museum's photograph collection is as useful for the collection of information as it is for the recording of the activity of the institution, for later evaluation. "The Ravages of Time" focussed on the decay of objects, not unrelated to the themes of storage and conservation in museums. "Parallel Time" introduced contemporary Mexican syncretism, "Timeless Time" Zen, while "Dreamtime" recounted the mythology of Australian Aborigines, revealing their peculiar notions on time and history. "Death —The Last Depiction" contained a bier, funeral banners and clothes of mourning. "Fixing the Moment—Techniques, Customs" featured relics of personal correspondence and marriages.

All these exhibitions (and the others not detailed here), together with their catalogues and guides, have provided us with a snapshot of Hungary, certain segments of academic life and the museums themselves in the year 2000—a record of a moment in history. I think we can be proud of them. ❧

Győző Ferencz

The In-Between Poet

George Szirtes: *The Budapest File.* Newcastle-upon-Tyne/Budapest, Bloodaxe Books/Corvina, 2000, 208 pp.

Some years ago, Victor (Győző) Határ, the Hungarian poet, novelist and thinker who has made England his home since 1956, advised George Szirtes to "stay an Englishman, you know full well / that there's no earthly reason to change."[1] Indeed he went on to directly charge his much younger compatriot and fellow poet with the romantic moral imperative of Vörösmarty's 'Appeal': *"be an English poet —live / anywhere—destiny heart-tone passion // to the island home to which you've faithfully / bound yourself cleave immovably / the home-tongue of your being—English."* Határ, who has had abundant experience of what it means not to be a Hungarian poet in one's native country yet to remain just that in England, was almost certainly uneasy that Szirtes, in looking for his past—his 'roots', as it has become customary to call such searches for identity—would start writing in Hungarian and find himself consigned to the history of Hungarian poetry.

For those purposes, the quarter-century between 1956 and 1983 was lost irretrievably. From the time that he settled in England with his parents as an eight-year-old boy, Szirtes gradually forgot all about the Hungarian language right up to the point when, an adult and with his third book of poems in print, his interest was awakened in his birthplace and his family's past. Since then he has made regular trips to Hungary for shorter or longer periods, and the forgotten language has acquired new life in him—in the first place, thanks to commissions from Hungarian and English publishers to translate the works of classic and contemporary Hungarian writers. Still, translating a few books into English does not make one a Hungarian poet.

More than likely, Határ was warning Szirtes away from letting Hungarian become some kind of calling-card, his permanent critical epithet in English poetry. There are nations which come into fashion, like the Irish in the last few decades, but being Hungarian has not been fashionable anywhere for any lenght of time. There was more than a dash of provocative

1 ■ 'Szirtes Gábor Györgynek (To Gábor George Szirtes)'. In: *Halálfej* (Death's Head), N.p., Aurora, 1991, p. 233.

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intent in non-Magyar-speaking Ferenc Liszt's openly professed Hungarianness, and though it amounted to more than the flashy gesture of a Lord Byron having his portrait painted in Albanian costume, it was still a manifestation of Romanticism's interest in the exotic and, as such, wore the elements of fashion on its sleeve. Liszt did not set a transitory Hungarian fashion, on the contrary, he was exposed to ironical remarks in the West.

If Szirtes were to place undue stress on his Hungarian origins, he will become a one-track poet and himself deliver a label for future historians, which, although not stigmatizing his verse, will narrow it. By avowing his Hungarian roots he limits his own role in contemporary English poetry and will become unable to do without this idiosyncrasy. And not just in the eyes of critics either, for the greater the space won in his poetry by childhood memories and travel experiences the more he becomes a Hungarian within English poetry, a Hungarian who writes in English.

Such apprehensions are not unwarranted, but if they have surfaced in George Szirtes, not a trace of them is to be found in his poems. Yet the issue is touched on in the preface to his latest volume. Speaking about the sequences in which he has worked up memories of the family in Hungary with touches of the historical background—and there are a good few of these, to mention only 'Metro', 'The Photographer in Winter', 'The Courtyards', 'Travel Book', and 'Portrait of My Father in an English Landscape'—he says:

> I did not set out to 'write' either Hungary or England. These national (let alone nationalistic) concepts are incidental, and often, to my mind, harmful. Becoming aware of places as background subjects inevitably brought them into the foreground, but their advance into fuller consciousness was accompanied, for me, by a growing realisation of a third, and possibly more pervasive theme, which threatened to negate both places. My greatest difficulty with nationality or culturally rooted notions is that they inevitably exclude those who are migrants, floaters, drifters and shadows. I may envy the rooted but I cannot enter their territory. What sense would it make for me to write like W.N. Herbert, or Tony Harrison, or Seamus Heaney, or a Liverpudlian or a Londoner or an East Anglian? I cannot even write as a Budapester. Writers like me cannot intrude into such specificity... It is not Hungary or any other place that is the issue. It is the inbetweenness. The synthesis is its own voice" (p. 15).

The poets whom Szirtes identifies in this passage are readily localizable: W.N. Herbert is a Scot, Tony Harrison is from Leeds, and Seamus Heaney is (Northern) Irish. Szirtes is not Hungarian, and his region, as he discerns so aptly, is inbetweenness, which of its very essence is unlocalizable.

That, then, is Szirtes's response: he could not be a Hungarian poet if he wanted to, any more than an English one, at least in the sense that, for example, Ted Hughes is. When he writes in English, in a formal language schooled in the traditions of English poetry, about—besides much else—the layer of identity which binds him to Hungarian history, the Hungarian language and Hungarian landscapes, he is not in any sense taking his bearings retrospectively. He is not searching for sharp distinguishing contours for himself with his Budapest subject-matter, nor is he a belated epigone of an earlier generation of confessional searchers for identity. Unlike the American confessional poets Robert Lowell and John Berryman, Szirtes does not reconstruct a lost personality through poetic devices. The Hungarian subject-matter is not programmatic; it is only when he happens to be writing poetry that he is unable to do so except in this odd state of simultaneous consciousness.

He grew up in an refugee family that considered the move to their new homeland final. They opted for full assimilation and so spoke English, even at home, from the very start. Yet as a poet Szirtes has had no option but to place his fastidious English in the service of deconstructing his intellectual Englishness. One of the paradoxes of his poetry, and perhaps its most compelling tension, derives from this.

It is also part of this paradox that, in the wake of his two decades of work, Hungary seems to have begun to gain visibility on the map of English poetry—and, moreover, in a way that no translated work has yet managed to imprint itself. The Hungarian language is a sort of semi-permeable membrane, and despite the efforts of some outstanding minds, not even a Sándor Weöres or János Pilinszky, or anyone else for that matter, has succeeded in joining the living stream of Western culture. For all its traditional receptivity, Hungarian literature has had a one-way connection with world literature. No Hungarian writer has yet become a genuine influence or point of reference and orientation. Hungary hardly crops up even as a subject, apart from the odd crumb that a reader is more surprised than anything to spot, as with the word *'puszta'* in piece XIV of Douglas Dunn's 'Europa's Lover' sequence: *"In my house built of noon night in the mountains / And in my house built of noon on the puszta".*[2] Or one wonders how a Hungarian coffee set found its way into the 'Waiting Lists' section of Jackie Kay's long poem: *"I pour coffee / from my new Hungarian set."*[3] And it is hard to think of anything to match the likes of Ken Smith who, with no Hungarian background, dips into Hungarian history, folk customs and countryside in the volume *Wild Root,*[4] its cover illustrated with pictures of the spectacular Carnival-tide parade of wooden-masked mummers at Mohács.

The Budapest Files, Szirtes's twelfth book of poems, is unusually bulky by British standards—almost twice as thick as his earlier volumes and even his selected verse. In its thematic arrangement it collects those of his poems which relate to Hungary in some manner, through family history or personal experience. Furthermore, it is precisely this old, unrealized dream of Hungarian literature that has garnered critical acclaim for the volume and the entire Szirtes oeuvre, because, from an English viewpoint, Szirtes is one of the poets who is helping to break down British isolation, as one of Peter Porter's reviews of an earlier book for the *Observer* newspaper emphasises: "George Szirtes has made a unique contribution to the debate about the insularity of contemporary English poetry. He has taken England into Europe." That quotation was already used by Oxford University Press in 1988 on the back cover of *Metro,* and it reappears on this latest volume, jointly published by Bloodaxe Books and Corvina.

As far as Hungarian literature is concerned, Szirtes is a real godsend as he is ideally placed to know what to take from the language of a Kosztolányi or Krúdy, and how best to present it, whilst he has also supplied an English voice to a host of contemporary Hungarian poets for a string of by no means obscure publishing houses, indeed, putting several of them out in volumes of their own, in the Anglo-Saxon tradition. Yet inconceivable as his poems would be without the Budapest background, the Hungarian connection is an incidental element in his poetry. He hap-

2 ■ *Selected Poems*. London, Faber & Faber, 1986, p. 228.
3 ■ *The Adoption Papers*. Newcastle-upon-Tyne, Bloodaxe Books, 1991, p. 15.
4 ■ Newcastle-upon-Tyne, Bloodaxe Books, 1998.

pened to be born in Hungary to end up over in England, but it might equally have been otherwise. The unchanging essence of his poetry is not what with others is expressed by the metaphors 'rootedness' or 'bridgehead' but that 'in-between' character. The titles of his verse collections, when not alluding to a visual concept, as with *The Photographer in Winter* (1986), *Blind Field* (1994) and *Portrait of My Father in an English Landscape* (1998), utilize means of traversing and transmission as metaphors already quite early on, before he had found his true role, as with *Short Waves* (1983), or as with the later *Metro* (1988) and *Bridge Passages* (1991).

Szirtes was helped to forge his poetry in this manner by a process which started to gather pace in Britain from the late 1960s, which is accurately signalled by the title that Robert Crawford, for one, gave to his 1992 survey: *Devolving English Literature.*[5] That process was not restricted to Great Britain but was a world-wide phenomenon, its outcome being that the focal point of attention within the English-speaking world shifted from English and American literature to the periphery—first of all, perhaps, to Northern Ireland, then the Republic of Ireland, later to Scotland, Wales, the West Indies, India, Asia, and Africa. As a result, the three stars of the Boston literary élite by the turn of the 1980s were the Irishman Seamus Heaney, the St. Lucian Derek Walcott and the Russian exile Joseph Brodsky. That was why V.S. Naipaul and Salman Rushdie came to assume such indisputable significance, and why, more recently, the place of earlier figures such as R.K. Narayan has been re-evaluated. This is not the same as the process by which exiled Eastern Europe writers have reached a wider public for political reasons. More than just politics, it is the act of literary self-determination of an age which professes to value cultures in juxtaposition, not hierarchically. The plural 'English literatures' is used, and that plural no longer signifies Irish, Scottish, Indian, etc. peripheries under the direction of the literary centres of England or America—at least, not in principle.

Szirtes's poetry plays a peculiarly potent role in this new situation (which it has become customary to call the postmodern age) because it does not come from the earlier peripheries of the British empire but from beyond even these—from outside the English-speaking world. His vernacular is not dialectal, but, not least because Szirtes grew up in London, a received English without a distinctive regional stamp. His polished versification, his richly stratified vocabulary, and his linkage to English poetic traditions make him a distinctively English poet. The aloofness with which he handles his subjects, the restraint of the voice, and the formal hallmarks of his poetry show parallels with that cast which the world sees as so English and which became so dominant in British poetry of the post-war years. It can perhaps be linked with the protean creativity of poets of the Movement in that it does not show the marked stylistic of any organized 'movement' at all. This poetry is not characterized by bold formal experiments; that is to say, its formal experiments are not directed at breaking down form but at uncovering further possibilities. Szirtes shows a preference for closed structures, the terzina and sonnet. Although English poetry for centuries has been restrained in the employment of rhyme, Szirtes doggedly rhymes, cautiously expanding its potential in the direction of dissonance. There is good reason why the American poets whom he admires are John Crowe Ransom and Anthony Hecht, or, amongst his own

5 ■ Now in a second edition (Edinburgh, University Press, 2000).

contemporaries, such technically brilliant writers as Derek Mahon or Peter Scupham—poets who could not be further from stridency, including the stridency of formal virtuosity for its own sake.

Szirtes's diffidence springs from deep within. In 'English Words' (p. 118) he writes: *"I cannot trust words now. One cultivates / the sensuous object in a locked museum: / their sounds are dangerous and must be heard / voluptuously, but behind thick glass. / Their emptiness appals one."* This is no abstract, Wittgensteinian suspicion of words drawn from linguistic theory; Szirtes's qualms are experiential in nature. In the twelfth sonnet of 'The Looking-Glass Dictionary' sequence (p. 178) he evokes the linguistic misgivings that he took with him from his birthplace: *"This tiny world, part Hungary, part England, / is the macaronic my parents speak— / my dad especially. There is no bland / unbroken stream. The words seem to leak / in drips, wearing away all sensible matter, / making minute impressions, exhausting them."* He picks this up again in the fourteenth sonnet (p. 179): *"The language here blankly refuses to mean / what it's supposed to. The signs are lost. / If you could only read the space between / or babble in fiery tongues at Pentecost,"* and he closes the sequence (p. 180) on this note: *"Hungary, England are verbal shadowlands / of spotless glass where all may sit and preen, / blank languages whose words refuse to mean."*

These doubts and experiences do not induce Szirtes to dismantle the relatively intact remnants of linguistic constructions, perhaps because they reached him in an already dismantled state. It can be no chance that the above sequence is dedicated to the Irish poet Gabriel Fitzmaurice. Szirtes takes just as much an outsider's view of the English language as the Irish do, and he is similarly an outsider in his view of his native tongue. From that position, he is obliged to create an English-language poetry of his own. There is nothing more to be stripped down; further deconstruction of the language is senseless from his viewpoint, but equally he cannot reconstruct something that never existed for him. He is left with constructing: his poems are constructed from linguistic elements handled with due suspicion. They fit deceptively into the English tradition, only they accentuate the very fact of fitting in from every single line. If they were unreflective utterances, there would be no need for them to fit in.

Yet in Szirtes' work this language issue does not turn into the infinite self-reflexiveness of a hall of mirrors; the hesitancy of language does not destroy the work, nor does the writer evaporate in it. At times he comes close, as in the last sonnet of the 'Travel Book' sequence, in which language and person eat away at one another (p. 188): *"The ego grinds and grates like a machine / producing tiny slips on which is written / the nonsense it feeds upon."* Despite which it ends on a note of hope: *"The question is where you go. Come hope. Come home,"* which is justified within the text by nothing other than that in-between state, which can switch at any time from existing nowhere to existing somewhere, though admittedly it can straight away lose its temporary home. One can well imagine that Szirtes, to begin with, turned to his memories of Budapest in the first flush of a search for identity, but he probably quickly realized that he was not going to find it there. There were many other things to be found, though, such as the traces of what he might have become and did not become in Hungary, which he can compare with what he has become or has not become in England.

This in-between existence makes his voice at once intimately homely and unattainably aloof. That is why cropping up

so often between the lines are the figures of his parents through whose fates he is able to come into proximity with his own. But only into proximity. 'The Photographer in Winter' sequence is a memorial to his mother, who took her own life. Irony still mingles in the soberly descriptive sentences of his disciplined stanzas: *"...Please / Co-operate with me and turn your head, / Smile vacantly as if you were not dead / But walked through parallel worlds"* (p. 85). Yet the poem captures just as much elemental pain as any passionately confessional kaddish. At the end of the poem, the writer photographs his mother, who was herself a photographer: *"...I am exposed / And doubled. I have grown two-faced, split skins, / Become a multiple. Something begins / To bother me—I think it's my own voice"* (p. 91). The son, who now has his own voice, thus appears in the photograph that he has made of his mother.

That is why these poems are tied so often to places and memories, the memory of places, even when he can expect nothing from them. Szirtes pursues the great journey to its end. The poems are arranged in three sections. The first set of poems works up childhood memories and the history of the family's vicissitudes. In 'Metro' he takes a time journey to conjure up the horrors of the war years, the hiding, his father's spell in a forced labour camp, his mother's in a concentration camp. The second section makes another attempt to assemble a picture of his younger years from the different stance of an English present. Here a bigger place is given to poems taken from the earlier books, published before his return visits to Hungary. The third section sets out the poems of the real city that he found. In this way he has constructed from poems a Budapest of his own which is more than a sliver of memory and more than a mere travel experience. Construction. The edificial quality is given visual force by the illustrations that adorn the cover and section heading papers: atmospheric, beautifully executed pastels of Budapest streets, a courtyard, and the façade of an apartment block by Clarissa Upchurch (the author's wife).

The last poem bears the title 'Soil'. With the volume spanning an arc from memory to experience, it would not be surprising if the metaphor of soil, earth, clod, signified that the poet has perceived his home, found his way home. Szirtes would have every justification for lulling his readers and himself with that. Yet why would he do that? The words lead us off part way down that path: *"there is nowhere to go / but home"* (p. 207). And were those his final words, the book would certainly close on a massive banality, but for the fact that the assertion is negated in the very next breath: *"which is nowhere to be found"*. What follows, for this is only the start of the final cadence, is thoroughly typical of the gentle obduracy of George Szirtes's verse. With a witty rhetorical flourish, he confronts the duality of that assertion and negation with a fresh duality: *"and yet / is here, unlost, solid, the very ground / on which you stand but cannot visit / or know."* It is not the mirroring of contradictions that makes this ending so marvellous, though it is partly that too, but much more that by this mirroring of contradictions the positive assertion of the verb set in a line by itself (know), with which he ends the poem and the volume, has already been negated by the auxiliary verb of the previous line (cannot).

The knowledge Szirtes has acquired is 'unknowing'; his home—the bit of soil on which he happens to be standing right now. If he has nowhere to set his foot down, then he makes poetry of that. His poems have left an enduring imprint of that evanescent state of in-betweenness on the history of modern lyric poetry. ❧

Krisztina Passuth

An Art Historian with Two Faces: Ernő Kállai

Ernő Kállai: *Összegyűjtött írások. Magyar nyelvű cikkek és tanulmányok 1912–1925.* (Collected Writings. 1. Articles and Essays in Hungarian 1912–1925) Budapest, Argumentum Kiadó – MTA Művészettörténeti Kutató Intézet, 1999. Edited, with Notes and an Index of Names by Árpád Tímár. • Ernst Kállai: *Gesammelte Werke. 2. Schriften in deutscher Sprache 1920–1925.* Budapest, Argumentum Kiadó – MTA Művészettörténeti Kutató Intézet, Budapest, 1999. Herausgegeben, mit Anmerkungen und einem Nachwort versehn von Csilla Markója unter wissenschaftlicher Mitarbeit von Monika Wucher

A prominent critic of 20th-century Hungarian and German art, Ernő Kállai (1890–1954) was born to a German father and a Serbian mother and grew up in a Hungarian cultural milieu totally bilingual in German and Hungarian. After obtaining teaching qualifications, he travelled to England, Scandinavia and the United States. At the outbreak of the First World War, he was called up, wounded and transferred to home duties in 1915, thus escaping further front-line service. Still before 1918, he met Lajos Kassák (1887–1967), a poet, artist and editor from a working-class family who became the leading figure in the Hungarian avant-garde. Quite independently, but not at all unaware, of the anti-war sentiments of the German Left, Kassák himself openly came out against the war in his journal *A Tett* (The Deed) and, when this was banned in 1916, in its successor, *MA* (Today). Kállai was introduced to Kassák at the Budapest exhibition venue of *MA,* and this experience, at least initially, determined his views and his entire life. At that time Kállai was still not a contributor to *MA.* In fact, he published nothing of note until 1920 and was working as a schoolteacher on the outskirts of Budapest. His career as an art critic effectively began in 1920, more or less at the time he settled in Berlin. He immediately fell in with German intellectual circles. For a while he was on the staff of *Jahrbuch der Jungen Kunst,* a highly acclaimed annual at the time. This position opened up new vistas for Kállai: it gave him an opportunity to meet the best of the Russian avant-garde, such as El Lissitzky and Naum Gabo, and familiarize himself with Russian and international Constructivism. An expressive language and a rich and complex style characterized his writing. He soon earned wide acclaim in Germany, his work frequently being the subject of appraisal and debate. At that time he maintained an extensive international network of international contacts. He contributed articles to

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Czechoslovak, Dutch, Serbian and Austrian journals, as well as to several in Hungary. A major turning point came when Hannes Meyer, the second director of the Bauhaus, appointed him to the editorship of the journal *Bauhaus*. (Under the first director, Walter Gropius, László Moholy-Nagy had held the position.) Kállai made important improvements to the journal. However, in the early 1930s even the Bauhaus could not provide him the intellectual security he needed: he turned against the official line in art politics with increasing ferocity. Given the conditions in Germany, he decided in 1935, relatively late, to leave and return to Hungary, where he found himself, once again, up against an increasingly right-wing cultural administration. His work as a critic came to dominate his other activities: in this period he looked up Hungarian painters working in isolation in their studios, helping them by organizing smaller exhibitions. After surviving the Second World War, he hurled himself into teaching and writing in 1945; in 1946 he organised the first group exhibition of abstract art in Hungary and founded an association *Galéria a négy világtájhoz* (Gallery to the Four Points of the Compass). In 1948 he lost his teaching position and all his income sources. A complete fall from grace meant that he had to survive on the meagre income which casual translating provided. Marginalized, isolated and alcoholic, his vital energies were sapped and he died in 1954 in relative obscurity. However, his spiritual legacy has survived the darkest years. A bibliography of writings from the period betwen 1912 and 1925 is currently being produced and the selection now under review in the original languages (Hungarian and German) is a scholarly undertaking of the highest order.

The two volumes published jointly by Argumentum Kiadó and the Art History Research Team of the Hungarian Academy of Sciences in 1999 and containing Ernő Kállai's early writings exemplify a higher standard of scholarship than any of the previous Hungarian selections or the 1986 German selection by Tanja Frank, published by Kiepenhauer Verlag of Leipzig.

All those interested in the 20th-century Hungarian avant-garde avidly awaited Ernő Kállai's selected articles *Művészet veszélyes csillagzat alatt* (Art under an Ominous Constellation, 1981), edited by Éva Forgács. This contained a number of essays that had been unavailable earlier. In some cases no one had known of them. Twenty years later the book is still one of the most widely read and most disputed source publications, regardless of the fact that neither the selection nor the bibliography could provide a full picture of Kállai. This collection of essays was followed by the 1990 edition of *Új magyar piktúra 1900–1925* (New Hungarian Painting 1900–1925, originally published in 1925).

The editors were aware that the two books—one in Hungarian and the other in German—complement, indeed presuppose, each other. Ernő Kállai's published writings between 1920 and 1925 (including *Új magyar piktúra*) go hand in hand. For Kállai, the two languages and the two cultures were of equal importance, both throwing up further issues through their association with each other. Nevertheless, Kallai's articles written in Hungarian had a different function in Hungary from those he wrote in Berlin in German. Kállai spent fifteen years in Berlin (between 1920 and 1935) and in all likelihood he would have stayed there, had not the Nazis come to power. (It is impossible to say at this stage whether he would have preferred to broadcast his opinions, his displeasure and enthusiasm from Budapest or from Berlin.)

Kállai was an important critic as well as a theoretician and art philosopher. (His critical output was first, and very thoroughly,

discussed by Éva Forgács in the 1981 selection of Kállai's writings.) He readily reacted to the latest exhibitions, books, art movements and galleries. Kállai as critic, as we shall find, played slightly different roles in Hungarian and German criticism.

Living in Berlin, Kállai was unable to observe and comment on everything what was concurrently taking place in Hungary. Instead of reflecting on the topical, in Berlin he wrote about those artists who were closest to his heart. Hence his frequent essays on Lajos Kassák and László Moholy-Nagy, the two Hungarian figures of the emerging international avant-garde. He also frequently wrote on Béla Czóbel, Lajos Tihanyi, Aurél Bernáth, József Csáky, József Egry and others, artists who could not be associated with geometric abstraction. Kállai's personal tastes concerning Hungarian art were extremely broad-ranging; he was sympathetic to a great range of diverse styles, as *Új magyar piktúra 1900–1925,* testifies.

If we choose to discuss his critical work in an international context, it is clear that he was much more discerning as to the possible candidates, regardless of the fact that the range of artists on offer was much wider in Berlin. Exhibitions in galleries and graphic portfolios all formed part of Berlin's art life. Within this lavish offering, and the wealth of competing movements, Kállai the critic focused his attention on work that best accorded with his own views. Or to put it another way, he formulated a system of norms and expectations that accorded with his own tastes.

In comparing the Hungarian essays with the German, we paradoxically discover that Kállai's views on German artists and art, or on Berlin artists, can be comprehended much more readily by reading his articles written in Hungarian on Hungarian artists, than by a study of his German essays. The articles published in *MA* and, even more importantly, in *Ars Una* and *Magyar Művészet* (Hungarian Art) and elsewhere, are essays in art theory and reflections and judgements on the events of the Berlin art scene. He covered Wilhelm Lehmbruck, graphic sheets, the art exhibitions, which had no jury there, the Flechtheim Gallery, Georg Grosz, Ivan Puni and Kandinsky. These reports meant much more to his small, Hungarian readership than they did in Germany, where there were other sources to turn to. In this sense we can regard Kállai as a mediator between the Hungarian and German cultural scenes, keeping his Berlin audience informed on Hungarian painters and Constructivist artists, whom they would otherwise know nothing about. Whether Kállai was able to arouse the curiosity of the Berlin audience in this regard, we do not know.

Still, even in the role of an art critic interpreted in such a narrow sense, Kállai's significance went beyond that of a providor of information, above all in the area where his interest focused. In addition to Hungarian artists, his attention was primarily drawn to the greatest of the Russian avant-garde: El Lissitzky, Naum Gabo, Ivan Puni, and Kasimir Malevich. It was in Berlin that Kállai first discovered their work and came to know them personally. Both El Lissitzky and Gabo lived in Berlin in 1922; the climax of their stay there was the monumental *I. Russische Kunstausstellung* in the Galerie van Diemen. Kállai had a chance to study Malevich's works closely on this occasion, but Malevich himself came to Berlin only later, in 1927. His was, more or less, the first discussion of the Russian artists. It occupies a prominent place in his oeuvre, capturing the essential features of the movement. Although his most insightful and ambitious articles discuss the works of Hungarian and Russian artists, the cri-

tiques and reviews of exhibitions devoted to German artists are also important. The recently published *Gesammelte Werke* mentions, in addition to the Hungarian and Russian artists, Georg Muche (twice), Hans Richter, Werner Graeff, Karl Peter Röhl, Max Burchartz, the Swedish-origin Viking Eggeling and the critic/theoretician Adolf Behne. With the exception of Muche, all belonged to the Berlin school of international Constructivism, a movement that emerged in 1921 and 1922, precisely when Kállai was taking his first steps as an art critic. Kállai reacted to and reviewed what was just emerging, immediately assuming the position of a critic.

Kállai spent fifteen years in Germany. This was perhaps the most important phase of his life, in terms of the quantity and quality of what he wrote. He saw German and Russian artists in their studios, carefully studying the elements of their brushwork and composition. His articles were published by German periodicals and yearbooks, such as *Der Ararat, Das Kunstblatt, Der Cicerone, Jahrbuch der Jungen Kunst.* After 1928, he was the editor of the journal *Bauhaus,* and in 1929 started his own *Der Kunstnarr,* which only produced one issue. Judging him, as if he had been a German critic, against the milieu in which he moved and which influenced him, we would have to place him in the company of the best, with Adolf Behne, Eckart von Sydow, Will Grohmann, Paul Westheim and others. The most obvious comparison is with Carl Einstein, who was the most interesting, colourful and free-spirited of critics and whose interpretation of modern art and identification with new trends was on a par with Kállai's.

Born in 1885, Carl Einstein was Kállai's senior by five years. His main interest was in German studies, he had read Nietzsche avidly, and had studied the art of Antiquity. He published first in 1910, thus starting ten years before Kállai. (His first success was with a novel, *Bebuquin.*) Like Kállai, Einstein was of the Left. He was politically committed in his intellectual outlook and in his way of life. He published in the German left-wing review *Die Aktion,* Kállai placed his articles with *MA* and published in Vienna after 1920. Einstein, like Kállai, produced art criticism, literary works and translations in an idiosyncratic style that made his works heavy reading. Unlike Kállai, who was mainly interested in German and Russian art, Einstein was drawn to the French. Kállai moved to Berlin in 1920, Einstein settled in Paris in 1928. With the exception of his articles for the French magazine *Documents,* Einstein published in German, whereas Kállai wrote in both German and Hungarian. Between 1920 and 1928 they both lived in Berlin, moving in the same social circles. They both had links with the Gallery Flechtheim in Berlin, which presented the best of French artists and African sculpture. Both of them were regular contributors to various German periodicals and almanacs. They appeared in *Das Kunstblatt,* one of the most prestigious art magazines of the period, edited by Paul Westheim and published by Kiepenhauer Verlag. In other respects too their careers ran parallel courses, without actually converging. A case in point was *Europa Almanach,* a book published in 1925 that had Carl Einstein and Paul Westheim as editors. The guiding principles were close to Kállai's heart. It featured a number of Hungarian artists (József Csáky, Béla Czóbel, Béla Uitz). There was the equally outstanding *Jahrbuch der Jungen Kunst,* which published some of Kállai's works but none of Einstein's. So, even if the contacts between the two were far from frequent, there was at least one occasion when Kállai's attention was drawn to Carl Einstein. In the Budapest

Ars Una (February, 1924) he reviewed, among other publications, Carl Einstein's new book *Der primitive japanische Holzschnitt* in an article entitled *"A német művészeti könyvpiac újdonságai"* (New Publications on the German Book Market). "Carl Einstein exercises mastery in characterizing those intellectual and psychological components which, as an artform and with their illustrative facility, ensure a conscious[1] style to the woodcuts by the Ukiyoye school."

The resemblances between their two careers explain the analogies and discrepancies between their thinking, the norms they applied and the views they held on art. Setting Kállai's work as a critic against Einstein's, we study the traits of the former thrown into sharper relief. Einstein wrote some of the most progressive-minded articles of his age; his critical work, theoretical as well as practical, was determined by his attachment to Cubism, even after 1920 when French Cubism had long passed its high-water mark. In Einstein's eyes, the four great masters (Braque, Derain, Léger and Juan Gris) and, of course, Picasso, continued to set the standard and he judged contemporary art by that. For him, Cubism meant the creation of form and space, and it was the peculiar power of form creation that he admired so much in tribal art, inducing him to write an influential book, *Negerplastik* (1915) on the subject. For African sculpture, he took Adolf Hildebrand's book *Das Problem der Form* (1910) as his point of departure. And just as for African sculpture, he looked for the origin, the *préhistoire* in contemporary works of art along with the circumstances of the work's inception. In contrast, Kállai's crucial notions were "vitality", *"Lebensordnung"*, rhythm and biological determination. His ideas for an exhibition at the Galerie Möller *(Vision und Formgesetz),* although never actually realised, were along the same lines. Although Kállai also took an interest in sculpture (he wrote articles on Wilhelm Lehmbruck and Naum Gabo, among others), his main interest was in painting: in brushwork, colour effects, etc. In his summing up of modern Hungarian art, *Új magyar piktúra,* he exclusively analysed painting. Carl Einstein denounced painting based purely on colour effects and blocks of colour, Fauvism included. Even though their basic tenets were at variance, they did concur in their rejection of Expressionism. Carl Einstein could accept only some of the painters of the *Der Blauer Reiter* group, (such as Franz Marc, Paul Klee and Wassily Kandinsky) since they, in his opinion, opened up channels towards the depths of soul.

The point upon which the two critics disagreed most concerned their respective attitudes towards the past and the future and, in connection with this, their evaluation of Constructivism and the Russian avant-garde in general. While Einstein attached great significance to cultures alien to the European mind (African, Oceanian, Japanese, etc.) and cared deeply for the ancient roots of modern art, Kállai's worldview was decidedly future-oriented. Fundamentally utopian and Messianic in character, this approach came through as early as 1921, in an article he published in *MA,* on László Moholy-Nagy. "In Moholy-Nagy's art, the metropolis and modern technology represent the unbounded possibility of movement and form, as well as the euphoria felt over the reality of it, the sudden discovery of a new world, the dancing and merry youth of the vision opening eyes on the Sun and the Universe."[2] In Kállai's

1 ■ Ernő Kállai: *Összegyűjtött írások I. Magyar nyelvű cikkek és tanulmányok* I. p. 90.
2 ■ Ernő Kállai: "Moholy-Nagy", *MA*, Vienna, January 1922. In: Ernő Kállai, op. cit. p. 15.

utopian imagination all new artworks "proclaimed the law and the freedom casting light on an infinite perspective of the future." And as to "the art of the future", he contrasted it with Cubism and Expressionism alike. He provided a detailed analysis of Cubist painting in an article "A kubizmus és a jövendõ művészet" (Cubism and the Art of the Future), with special regard to "Cubist deconstruction", something that Carl Einstein also regarded as fundamentally important. In sharp contrast with Einstein's idealised Cubism, Kállai declared that "Cubism has reached the civilizatory and constructive self-consciousness of our age, but it has failed to draw the social, revolutionary and artistic consequences in terms of ideology and mobilization, which feed on this self-consciousness."[3]

For Kállai, the artists of the Russian avant-garde, El Lissitzky, Naum Gabo, Ivan Puni and others, guaranteed the future; for Einstein, they meant disappointment once his initial enthusiasm had receeded. For Einstein, Constructivism was simply a faint and belated echo of Cubism and the revolutionary fervour of the Constructivist painters came too late in the day.[4]

The conflict in viewpoints between Kállai and Einstein cannot be explained on the grounds of their different political beliefs; they are easily explained by their different artistic attachments. Cubism provided the fundamental artistic experience for the young Einstein; Hungarian picture-architecture and Russian Constructivism did the same for Kállai, who turned into an art critic by discovering, interpreting and propagating these movements.

Nevertheless, it was not always and not in every regard that the tastes of the two critics differed from one another. On the subject of the artists of Neue Sachlichkeit (new objectivity), for example, they concurred in their favourable response to Georg Grosz and Otto Dix, regardless of the fact that the two artists were different in their styles and regardless of the original ideals of both critics.

After publishing numerous articles, each of them wrote a comprehensive treatise of 20th-century art: Kállai completed his *Új magyar piktúra* in 1925, Einstein finished his *Die Kunst des 20. Jahrhunderts* in 1926.[5] Both of these were relatively impartial works discussing 20th-century international—or in Kállai's case Hungarian—art up to the contemporary scene. The closing dates of the studies, 1925 and 1926, respectively, could not be regarded as important turning points either in political or in art history; they merely stood for one end of the first quarter of the century. The trends that came to characterize the years to follow (Neue Sachlichkeit, Surrealism, etc.) had already made their appearance and thereafter would only develop to fuller maturity. After 1928 Carl Einstein observed the world from Paris; Kállai continued working as a German art critic until the mid-1930s. Unlike Einstein, Kállai never took an interest in the art trade, not wishing to be bound by loyalty to an art gallery. He preserved his integrity even after 1935, following his return to Hungary, when he effectively ceased to be a "German art critic". Had he remained in Berlin, he would have either lost his spiritual and moral independence or perished. Admittedly under adverse circumstances, but here in Hungary he was at least able to live, teach and write, going on from old ideas to form new theories even after 1945. ❧

3 ■ Ernő Kállai: "A kubizmus és a jövendő művészete" (Cubism and the Art of the Future), *MA*, Vienna, January 1922. In: Ernő Kállai, op. cit. p. 27.

4 ■ Carl Einstein: *Die Kunst des 20. Jahrhunderts*, Berlin, Propylaen, 1926, p. 160.

5 ■ See: op. cit. note 4.

Balázs Illényi

Celestial/Extraterrestrial Minds

György Marx: *A marslakók érkezése. Magyar tudósok, akik nyugaton alakították a XX. század történelmét* (The Coming of the Martians. Hungarian Scientists who Shaped the History of the 20th Century in the West). Akadémiai Kiadó, 2000. 424 pp.

In contrast to Austria and other small countries, Hungary did not have linguistic contact with her neighbours; Hungarians form an isolated ethnic enclave in Europe. Hungarian writers could find a wider readership only by emigrating and writing in a foreign tongue. But giving up the mother tongue usually means the end of the career for a poet, or turns him into an insignificant journalist. Since World War I, the main export of Hungary has consisted of bestselling journalists, producers, music stars. They were scattered worldwide by a centrifugal force which arises when a small country has plenty of talents without the chance for their unfolding at home. But later I recognized that their option is only one side of the truth. This demi-monde of cafés and 'goulash-bars' of Vienna, New York and Tokyo does not represent the most valuable part of the Hungarian contribution to culture. The really valuable elements of the Hungarian 'export' were absorbed by the physics, mathematics, and biology departments of universities, furthermore by hospitals, research laboratories, state committees, and orchestras. I don't think that a comparable exodus of scientists and artists ever existed since the fall of Byzantium. *(Ubiquitous Presence)*

These are the thoughts of Arthur Koestler (1905–1983), on a peculiar trait in the 20th-century history of his native land, something that is still observable today: intellectual emigration. The phases of it and the most important figures involved now feature in this volume, in which György Marx (himself a physicist of international renown) celebrates the life and work of Hungarian natural scientists who shaped the history of the West in the past hundred years. The chief merit of the book is that it does not wish to rewrite history, but takes a fresh look at epoch-making events from the Hungarian perspective, thus recharging points of contact and dates, so familiar from any textbook, with a new meaning. This is what makes his book a surprising new summary—hitherto not available in Hungarian educational and specialist literature; as he says, this is "the Hungarian version [of the history] of the release of atomic power, fast data processing, the birth of space research, the exact scientific approach to life."

Guides to Hungary most often still try to sell the country as the land of Tokay wine, paprika, goulash, Gypsy music and

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Balázs Illényi
trained as a historian and is on the staff of the economic weekly Heti Világgazdaság.

Hortobágy herdsmen, despite the fact, says the physicist, that the cultural heritage of the country, of which not only foreigners but Hungarians as well are insufficiently aware, is of far greater significance. For how many of you knew that matches, wolfram-filament or krypton-filled light bulbs, the ball-point pen, Rubik's cube, alternating current technology, streamlined planes, radioactive tracing, the atomic reactor, electronically programmable computers, time-sharing e-mail networks, the BASIC programming language, the word processor Word for Windows, the Pentium microprocessor or the Lunar Rover were all "born in the minds of people whose cradle rocked in Hungary"? The impressive list does not end here, and the author goes on, adding numerous details, relating first- and second-hand anecdotes, to produce an unusual and highly enjoyable history of science.

Stories, incredible when first heard but in fact all too typical of the Carpathian Basin in the 20th century, include that of Róbert Bárány (1876–1936), who became known as a physician in Vienna. Born in the Austrian capital of a Hungarian father and a Czech mother, he almost missed the award ceremony in 1916, as not long before he was still in Russia, near the Afghan border—as a prisoner of war. At the outbreak of the First World War, he registered for voluntary field service, partly of course to help and partly to have a larger corps of subjects on which to study the human sense of balance. It was in part thanks to his observations made at the front that he proved that the liquid contained in the inner ear, and its movement, had a direct influence on the sense of direction in the brain. On receiving his award from the King of Sweden, for "his work in the physiology and pathology of the vestibular organ," he especially thanked those wounded soldiers who allowed him to examine them, through which they also "served the interest of the whole of mankind."

Though graduating as a chemist and physicist, György Békésy (1899–1972) made another great contribution to medical science, and just like Bárány, received the Nobel Prize (in 1969) for his studies on the inner ear. Of Slavonian and Hungarian origin, studying in German, French and Hungarian, this scientist easily crossed borders not only between countries but disciplines as well. His field was acoustics, the common domain of physics and medicine, and his chief studies concerned the transmission of sound and the ear. He studied first in Hungary between the wars, and continued from 1946 on in the Karolinska Institute, Stockholm, whence he could not return to Budapest due to the 1947 Communist takeover. Harvard University was happy to offer a position to the scientist the Hungarian Academy of Science had struck off its membership list (for political reasons, of course); after two decades he broke camp again, this time because he was dissatisfied with the system of research subsidizing, and spent the last years of his life at Hawaii University, doing research in perception in general. His body was committed, in accordance with Polynesian custom, to the Pacific Ocean.

It was also politics that interfered with the career of two other Hungarian scientists, whose work in biology was also acknowledged with the Nobel Prize. György Hevesy (1886–1966), who graduated as a chemical engineer, worked with Lord Rutherford, the discoverer of the atomic nucleus, in Manchester, where he discovered isotopes and developed radioactive tracing. According to the professional legend, in the latter he was helped by his housekeeper, who would always recycle leftovers for the next day's meat loaf. One day Hevesy "left" on the plate a piece of

meat which he had injected with a weak radioisotope, and the next day, much to his satisfaction, his Geiger-Müller counter started ticking when approached to his meal. The Hungarian establishment between the wars, however, did not understand the point of his experiments, so he set up his nuclear laboratory, on the invitation of Niels Bohr, in Copenhagen, where he studied, among other things, the course of phosphorus in metabolism, in relation especially to DNA. His work was acknowledged with the Nobel Prize in 1943. His contemporary, Albert Szent-Györgyi (1893–1986), enhanced the reputation of his noble family with research into oxidation as a provider of energy within the cell. He made his most important discoveries in the "capital city" of Hungarian paprika, Szeged, where he pointed out that the regulator of oxidation in the cells is vitamin C. From the vegetable he managed to extract the vitamin, produced at the time only with great difficulty, in great quantities, and determined its composition. The Nobel Prize laureate (1937) in 1947 became suspicious in the eyes of Hungarian Communists, which forced him to emigrate to the United States, where it was not only his research that created a stir, but also his pacifism and his readiness to be involved in politics. Though in his last years he felt he had come to understand the secret of animal protein, the profession was largely uncomprehending.

Perhaps the most compelling part of the volume concerns the history of the discovery of chain reactions, the construction of an atomic pile and the building of the atom bomb (the author himself is a theoretical nuclear physicist). The circumstances of recognizing the possibility of fission were already quite unusual, as the discoverer of the nucleus, Lord Rutherford, nearly threw the Hungarian physicist Leó Szilárd (1898–1964) out of his office, when the latter tried to convince him, in the autumn of 1933, that nuclei could be used for energy production, if only an element could be found which, on being bombarded with a neutron, would emit two. Szilárd did not give up, and patented his method in Great Britain, but as years of experiments failed to prove his theory, he withdrew the patent at the end of 1938.

The story of course did not end with this, as by that time a league of physicists and chemists were studying chain reaction; a few weeks after Szilárd withdrew his patent, fission in uranium was achieved. As the book reveals, those Hungarian scientists who were doing research in nuclear fission, and who had in the thirties fled Hitler's Germany for America, were experts not only in quantum mechanics, but in concealing their findings from the world as well, fearing the Nazis might build an atomic bomb. When the findings were nevertheless revealed, they did all in their might to precede the Germans. The American programme was called the Manhattan Project, and its chief participants included Nobel Prize winner Italian physicist Enrico Fermi and the Hungarian Jenő Wigner, who in December 1942 in Chicago managed to start the first self-sustaining chain reaction—in effect the first atomic pile.

The objective of all research, carried out under extreme secrecy, now became the American atomic bomb. The project gathered great minds who came from Budapest (and who had of course already met there): Szilárd, Wigner, Ede Teller and John von Neumann. Teller, who left the Hungarian capital in 1926, at the age of 18, was later to become the "father" of the hydrogen bomb, while Neumann, considered one of the brilliant mathematical talents of the age, was needed for calculations necessary for the two-phase, or plutonium, bomb. The participants often reverted to

Hungarian as the medium of discussion when the supervising American general had to visit the bathroom. Once the bomb was constructed and Germany was defeated, the majority of physicists tried to prevent its use: Szilárd and Wigner were collecting signatures among their colleagues to convince President Truman that a demonstrative test in front of the enemy government and staff would make dropping the bomb on Japan unnecessary. As it is well-known, politics swept this initiative aside.

Beside starting the atomic age, Hungarians also made their names in other fields. Few people in Hungary know that Nobel Prize winner Richárd Zsigmondy, the constructor of the first ultramicroscope, was born of Hungarian parents in Vienna, in 1865. Dénes Gábor (1900–1979), an authority in information technology, is better known. After working for multinational companies (Siemens, Tungsram, Thomson-Houston), he held a chair at Imperial College, London, where he founded the science of holography. He received the Nobel Prize only twenty years after his discovery, in 1971, as it was only then that the practical use of lasers could be attained, necessary for holograms.

Beyond this, says the book, Hungarians seem to have had a share in paving the road to information society. Above all, the computer in the modern sense is the brainchild of a Hungarian. As the designer of EDVAC (Electronic Discrete Variable Calculator; 1945), John van Neumann says in the manual for the instrument:

> The logical control of the device, that is, the proper sequencing of its operations, can be more efficiently carried out by a central control organ. If the device is to be all-purpose, than a distinction must be made between the specific instinct or given for a particular problem, and the general control organs which see to it that these instructions—no matter what they are—are carried out in proper sequence. (Neumann: First Draft of a Report on EDWAC, 1945)

The machines constructed became more and more powerful in terms of the number of calculations carried out, but communication with them was awkward. A solution was provided by mathematician János Kemény, who was born in Budapest in 1926, and who was also involved, during the Second World War, in the Los Alamos A-bomb programme. He was the one to develop the first programming language of wide use and accessibility, BASIC, in the early sixties, and he was the first to use e-mail. A Hungarian was the developer of what makes the use of computers easier, menus and windows, just as of the word processor Word. Károly Simonyi Junior emigrated to the Silicon Valley rather "late," in 1966, and he is still the chief systems developer of Microsoft. It is also little-known that the person heading Intel, the leading producer of microprocessors, Andrew Grove, was born in Budapest as András Gróf, and he chose emigration to America in 1956, at the age of twenty.

Even the most patriotic people would not imagine that Hungarians have more to do with space research than a few smaller instruments and an astronaut, Bertalan Farkas, who went up in space in 1980, in the course of the Russian Intercosmos programme. Professor Marx shows that this is also a field where the results are often founded on the work of Hungarians. Even the beginnings of aviation saw Hungarians contributing, as the first dirigible airship was constructed by Dávid Schwarz of Keszthely. Initial failures, however, depressed him so much that in a few months' time he died of grief, and the plans corrected meanwhile were bought from his widow by no one else but Ferdinand von Zeppelin. But there was a

Hungarian to pass on the torch to. Tódor Kármán (1881–1963), born in Budapest, and graduating as a mechanical engineer, in his twenties was already studying airships and their aerodynamic properties. He was the one to discover that it is the vortices formed behind flying objects that cause loss of energy in the objects. Living in Germany between the wars, then emigrating to the United States, Kármán developed the idea of streamlining, first applied for aircrafts and now so important in automobile design. His greatest contribution was probably to the development of jet-propelled aircraft during the Second World War. Thanks to this, his work is emphatically honoured in the International Space Hall of Fame, Alamogordo.

There were further Hungarians involved in the American space research programme. Victor Szebehely, for instance, was dubbed by NASA deputy director Hans Mark, with slight exaggeration, the person "who lead us to the Moon." He was right, says Professor Marx, in that NASA badly needed the services of the engineer, who was born in 1920 in Budapest as Szebehelyi Győző, and emigrated to the US in 1947, as he was one of the few people who were still versed in the science of celestial mechanics, long abandoned in the States as outdated. With its help he calculated the course of the Apollo ships from Earth to the Moon. NASA utilized the knowledge of other Hungarians as well. Ferenc Pavlics, who left Hungary in 1956, at the age of 29, was developing four-wheelers for General Motors, before designing the Moonbuggy for the astronauts landing on the Moon. Antal Bejczy also left his native land after the 1956 Revolution; he designed the mobile Sojourner for the 1997 Pathfinder Mars mission, which eventually sent 16,000 images from the planet.

The list could be extended, if not infinitely, certainly to great length, but the author, sometimes interrupting the often intertwining stories, poses the question that intrigues readers probably from the start: what is the reason for this surprising concentration of intellect? Though no definite answer is given, we are provided with many interesting hints. A less serious alternative is said to have been popularized by the very scientists of Hungarian origin who became successful in the United States, according to which they were extraterrestrial intelligences, Martians, as it were, or their latter-day descendants, for a proof of which take their incorrigible accent, or the fact that almost all of them came from the same part of Budapest. On this Tódor Kármán said once: "Around 1900 intelligent Martians were considering the bloodless assumption of power on Earth. For their agents they chose Hungarians, who had no relatives in the world. They taught them a few high-tech tricks, and sent them out for the technological conquering of the more developed parts of Earth. Hungarians have indeed been successful in assuming key scientific and military positions in the United States."

More seriously, the author attempts to find historical reasons for the special scientific and technological success of Hungarians in the twentieth century. "In peaceful times there is only a need for successful social adaptation (the copying of successful patterns), while under an ever-changing sky old paradigms fail, variable weather favours creative individuals." Hungary of course lived in the thick of history, in the last and earlier centuries, and "as pedagogy teaches, an environment rich in stimuli fosters talent." The effect of turbulent times would of course in itself be insufficient to produce talents in such great numbers: good schools were also needed. This is supported by the fact that most of the above-mentioned talents attended school in Budapest at around the

same time, in the first decades of the twentieth century. Hungarian education—especially in the natural sciences—was fundamentally affected by the organizing and political activity of the Baron Loránd Eötvös (1848–1919), Minister of Culture and Education, himself a physicist. From 1885 on he gathered Hungarian physicists for lectures and ensuing dinners every Thursday, which in a few years' time gave rise to the Society of Physics and Mathematics. And this organization has contributed not only to the further training of teachers ever since, but has also been organizing high-level competitions for talented students.

All scientists of Hungarian origin have paid their tributes to the alma mater, their educational heritage. Tódor Kármán once told

> how Mathematics, which I studied eagerly, was tought in terms of everyday statistics and it had fascination for me all over again. For instance, we looked up the figures of the production of wheat in Hungary for several years. We sat up tables and then drew graphs, so we could observe the change and the maximum and the minimum wheat production. In the diagrams we searched correlations, and we learned about "the rate of change" which brought us to the edge of calculus. We thus learned in a practical way that there was a relationship between quantitites that varied, and we learned at the same time something of the changing social and economic forces. (*The Wind and Beyond*, 1967.)

Jenő Wigner was taught by a different person, with a different method, but he remembers his school years with similar affection and respect:

> What I wish to draw attention to is how much of the intent in science, and how much of our attitude toward science we owe to our teachers. My own history begins in the *gimnázium* in Hungary, when my mathematics teacher, Mr Rácz gave me books to read and awoked in me a sense of beauty of his subject. (Nobel Lecture 1963)

These two things—education and historical situation—are then probably jointly responsible for these minds, and their effect is inseparable. This is what Nobel Prize holder György Békésy refers to, when asked about the chief issue of this book, the large number of great Hungarian scientists, large when related to the size and population of the country:

> When I lived in Switzerland, everything was peaceful, quiet and secure; we had no problems earning a living. In Hungary life was different, and all were involved in an ongoing struggle for almost everything which we wanted, although this struggle never caused anybody's perdition. Sometimes we won, sometimes we lost, but we survived. It did not bring an end to things, not in my case anyway. People need such challenges, and these have existed throughout the history of Hungary. ❧

Nicholas T. Parsons

The Joke that Dances over Catastrophe

Paul Lendvai: *Die Ungarn: Ein Jahrtausend. Sieger in Niederlagen.*
(The Hungarians. A Thousand Years of Victory in Defeat)
C. Bertelsmann, Munich, 1999. 634 Pages, with 24 pages of black and white illustrations.

If you write the history of a people (especially one as mixed as the "Hungarians"), are you engaged primarily in historical analysis or psychological portraiture? The question is a real one, even if its resolution hardly seems to matter in the context of a text so rewarding, entertaining and well written as the one under review. "The contradiction between individual genius and repeated national failure," says the blurb of Paul Lendvai's impressively bulky tome, "is one of the most fascinating features of the turbulent history of the Magyars, [as they pursued their nationhood] between Germans and Russians, between Austrians and Southern Slavs, between independence and subjection to foreign rulers. [Hungary's] continued existence, or rather its survival as a nation-state, may be considered a miracle; by the same token, the Hungarians, right up to the present day, have time and again turned out to be victors in defeat.... "What is Hungarian?" [asked Tibor Déry after the Revolution of 1956], and answered: "A joke that dances over catastrophes".

So are we embarked upon a work that seeks causes of historical events in reactions and behaviour determined by a perceived ethnic character, a sort of psychohistory of the Hungarian nation? Despite the eye-catching *bons mots* of the blurb, Lendvai's book goes much deeper than that, especially in the early and middle part of the book. While the author is an immensely gifted journalist (currently Editor-in-Chief of the Eastern and South-Eastern European Section of the ORF), he is also a scholar and honorary professor, whose record in Central European and South-Eastern European studies is distinguished. This book is far more substantial than the witty musings to be found, for example, in Luigi Barzini's *The Italians,* an international bestseller in its day; nor does it adopt the tiresome *de haut en bas* tone that disfigures Gordon Brooke-Shepherd's recently published *The Austrians.* On the other hand, although the author's passionate enthusiasm for his homeland is readily apparent, his book eschews the sort of Hooray Henry patriotism *("Our Island Story")* on which British children

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used to be reared, and which found a more sophisticated after-life in popular history written for middle-brow adults by writers like Sir Arthur Bryant.

This is hardly surprising. Lendvai's Jewish parentage on his mother's side stems from Alsósófalva (now Romania), and on his father's side from Kassa (now Košice, in Slovakia). As assimilated Hungarians living in a periphery where Magyarization policies from the late 19th century caused fury and nationalistic resentment, one can well imagine the sort of growing hostility such families may have endured; as Jews, against whom official Hungary turned in the hateful swirl of 20th century racial ideology, assimilation turned out to have marginalized them again, by moving the goalposts of Hungarian identity. One of the most fascinating chapters in the book is the twenty-eighth, entitled "Hungarian Jew or Jewish Hungarian?", which deals with what Heine called *der Taufzettel* as *Entrée-billet zur europäischen Kultur,* the conversion and assimilation of Jewry into European (in this case Hungarian) culture.

This chapter, and the two preceding ones, are as good a place as any to begin an overview of the whole book. Chapter XXVI, somewhat over half way through the whole text, marks a caesura, whereby the author abandons the flowing narrative of the first part and begins to treat his theme essayistically: "Blindness beyond all Bounds: the Hungarian Sense of Mission and the Nationalities" (Chapter XXVI); "The 'Golden Age' of the Millennium: Modernisation and its Darker Sides" (Chapter XXVII); "Hungarian Jew or Jewish Hungarian?" The Unique Symbiosis between the Nobility and the Jews" (Chapter XXVIII); "Will Hungary be German or Magyar? The Special Role of the Germans" (Chapter XXIX). The titles of these four chapters circle round the book's leitmotif, which is that of the recurring tension between the *idea* of the Hungarian nation (based on history, constitutionalism and cultural continuity, but also, until 1848 on an increasingly anachronistic feudalism); and the *reality* of foreign domination, partition and exploitation, finally the thwarted aspirations of other nationalities within the lands of St Stephen's Crown. The modern expression of the *idea,* enunciated by Kossuth in 1848 and reaffirmed by Ferenc Deák in 1867, is summed up (p. 342) as follows: "In Hungary there are nationalities, but there is only one nation." By the turn of the century, only one Hungarian MP, writes Lendvai, was consistently protesting against the systematic perversion of this idea (ruthlessly pursued as the non-negotiable premise of the Hungarian state), and vainly demanding respect for the theoretically liberal Nationality Law of 1868.

The author's handling of this particular topic (Law XLIV) is deft: we see (p. 331) how it guaranteed the equal status of every citizen, regardless of nationality, insofar as he was a constituent of the "one and indivisible Hungarian nation". However its preamble added the proviso that equal status applied only to the use of customary languages, and even then only so long as the efficiency of administration and justice required it, stipulations that from 1875 onwards were used to turn a concessionary law into an instrument of oppression. Yet, given the assumptions on which the Compromise itself rested, it is hard to see how things could have turned out otherwise; the Hungarian half of the Empire was only 40 per cent ethnically Magyar. To have begun sharing out legislative and executive power (except at the very lowest level) to the collectively more numerous other nationalities, would not only have been an act of political suicide comparable to that of Mikhail Gorbachev in the 1980's, it would have removed at a

stroke the Magyars' *raison d'être* as joint guarantor, with Austria, of the integrity of the Austro-Hungarian Monarchy. That at least seemed self-evident to most Hungarians. As Jörg K. Hoensch puts it, the ruling Hungarian elite "believed that recognition of individual equality for non-Magyar citizens, modest concessions in the use of their native languages and the guarantee of autonomy for the minority churches had already reached the limit of what the Hungarian nation-state could reasonably concede."[1]

The story of how the Hungarian nation came to find itself in such a historical cul-de-sac is really the sub-text of Lendvai's book. Not that this is a deterministic narrative where the unseen hand of fate guides the nation to its inevitable doom (even if it is quite easy to find Hungarians who tend to think like this). The narrative illustrates with vivid anecdotal asides and well-chosen commentary from other historians, eyewitnesses or commentators at home and abroad, that choices were made by leading figures in Hungarian history: in Transylvania during the Turkish period, in the Revolution of 1848 or in the inter-war period with Regent Miklós Horthy as head-of-state. And that these choices, at least in part, influenced the more or less lamentable outcomes of individual struggles. And yet, for all that Lendvai is no respecter of taboos, his narrative also demonstrates with clarity and empathy the difficulty of those choices, given the repeatedly desperate geopolitical position of the country. He quotes sources to show how time and again Hungarians have been the victims of manipulation and betrayal by Western powers pursuing their own interests, a phenomenon that begins at least with the wars against the Habsburgs of the Transylvanian Princes and continues through Trianon up to 1956 and the grossly irresponsible and hypocritical "brinkmanship" of John Foster Dulles. At Trianon the French, in an unholy alliance with a particularly Hungarophobe British delegation, cynically distorted their own supposed principles in accommodating maximalist demands made by Hungary's neighbours. Lendvai's summing up of this fateful parody of peace-making is no more than the truth: "Since the partition of Poland, the great powers have not dealt with any European state so mercilessly and with such injustice as they dealt with historic Hungary." (p. 418).

That it was not always thus is demonstrated in the first 100 pages of the book (Chapters I to VIII), in which the author describes Hungary's ascent from a band of marauding tribes to a settled Christian kingdom under St Stephen, and then to great power status under foreign kings. The end of this glittering (albeit sporadically interrupted) ascent, that had culminated in the great Renaissance court of Matthias Corvinus, is marked by the catastrophe of the Battle of Mohács in 1526. This defeat looked like the end of the road for an independent Hungary: "Hungary as an individual political force disappeared from the map of Europe," writes Lendvai; "Even the temperament of the Magyars, their 'peculiar mixture of the sanguine [sic], the phlegmatic, and the melancholy' (Jókai), may be explained by this deeply rooted and historically determined feeling of being an endangered species, given added emphasis by the doom-laden prophecy of Johann Gottfried von Herder. The preoccupation with the 'death of the Magyar people', the fundamental note of pessimism, the national feeling of isolation, the hope against hope, the threat to the individual, all these be-

1 ■ Jörg K. Hoensch: *A History of Modern Hungary: 1867–1986.* London and New York, 1988. p. 31.

came the great themes of literature. Numerous poems deal with the fate of the nation." (p. 111). And he goes on to quote from a character in Géza Ottlik's celebrated novel *Iskola a határon* (School on the Frontier, Budapest, 1950): "We have got used to a solitary celebration of our great, lost battles, which we have survived."

It has been said of the Czechs and Poles that they cultivate a martyr syndrome in their historiography, and perhaps the same might be said, to a greater or lesser extent, of all Central European nations. Outside Hungary, the historically determined Hungarian image was nevertheless sui generis, alternating between perceptions of brutality or of sacrifice, between denigration of the mindless chauvinist or encomia for the gallant victim: such have been the contradictory receptions of the nation's history from the Song of Roland to the Voice of America. For their part, the Hungarian image of themselves and their leaders seemed to veer between messianic optimism and bitter disillusion, between hero-worship and demonization, between nobility of ideals and perceived betrayal of the same. One of the reasons that this book is particularly worth reading is the ability of the author to evoke the charisma of great Hungarians while remaining clear-eyed about their failings. Of Ferenc II Rákóczi he writes (p. 175): "... (he) was the only noble commander who, throughout the whole rebellion, concerned himself with the suffering and misery of the serfs and offered them concrete assistance. His charm and natural modesty and selflessness lent his personality a special aura." On the other hand, concludes Lendvai sadly, "he was no general and his memoirs are basically a tale of battles lost."

Nowhere is the author's even-handedness more evident than in his treatment of Kossuth, who has been subjected posthumously, as in his lifetime, both to unjustified adulation and to prejudiced criticism. (Of course it doesn't help that, of the two great heroes of Hungary's Reform Period, the Communists chose to canonize Kossuth and airbrush out the aristocrat Széchenyi). In a chapter (XXII) entitled "Hero Kossuth against 'Judas' Görgey: "Good" and "Evil" in the Mythology of Sacrifice" Lendvai treads carefully through the minefield of the "traitor Görgey" debate. In a sober analysis (p. 277), he examines Kossuth's motives for accusing Görgey of treachery ("... the claim that the nation had only been defeated by trickery was designed to inspire hope in the future and win support for preparation of a new struggle for liberty" – p. 278). It was a tactical move, designed to re-establish his authority in the eyes of his countrymen, and especially among potentially sympathetic foreign powers.

Yet the instrumentalization, both of Kossuth's heroic image and General Görgey's supposed treachery in 1849 by surrendering to the Russians at Világos, has clouded the perceptions of generations of Hungarians and indeed of non-Hungarians. It cannot be laid at Kossuth's door that an unholy alliance of nationalists and Communists have used and misused his name for their own ends. Lendvai describes how, in 1952, the Rákosi regime brought out a study on Kossuth's 150th birthday, in which a contributor extravagantly envisioned a trinity of heroes who had made Hungary what it was: step forward Rákóczi, Kossuth, Rákosi![2] But even if we accept that Kossuth is the victim of

2 ■ It is worth noting that the instrumentalization of the trinity was probably an intentional allusion to Hungarian symbolic tradition. The most famous national "trinity" was that of Árpád – Rákóczi – Kossuth, while Kecskemét town hall has a mosaic featuring Széchenyi – Kossuth – Deák.

hagiographical treatment from such dubious quarters, his branding of Görgey (in his letter to the western powers of 12th September, 1849) as the "Judas of Hungary" remains one of the most despicable acts of any statesman worthy of the name, demeaning both Kossuth and the Hungarian cause.

One of the saddest passages in the book relates how Görgey subsequently lived for seventeen years under house-arrest in Klagenfurt. Returning to Budapest, he was hounded from his lowly job as book-keeper for the tolls of the Chain Bridge, and received the same treatment when he attempted to take up employment in a brick factory or work on a Transylvanian railway project. His memoirs were not published in Hungary until 1911: we can be sure they contain something of truth and honour in them, if only because Engels described them as *hundsgemein,* an endorsement if ever there was one, coming from such a source. In a sensitive summing up (p. 280), Lendvai makes the observation that should surely be hung on the wall of every Hungarian school: "Kossuth's historical significance would not be any the less, if Görgey were to be regarded as a superb soldier and a good patriot", a fact which has been acknowledged by every responsible historian and teacher of history for many a decade. As for Görgey, his "instrumentalization" (mostly demonization) was hardly less bizarre than the canonization (albeit with some bitter dissenting voices) of Kossuth. Some rehabilitation was eventually undertaken by the Horthy regime, which had an equestrian statue put up to him in Buda in 1935. Damaged in the war, its bronze contributed to the making of the mega-statue of Stalin pulled down by the freedom fighters of 1956. After the change of 1989, the post-Communist government had a new statue erected on the original site on Buda's Castle Hill.

Such pathos-ridden detail is Lendvai's stock in trade: he is rhetorical, ironic and empathetic in turn. His delight in rogues and impostors is given free rein, the Hungarian genius that he rightly acclaims having also its counterpart in a talent for intrigue, deception and not always genial chutzpah. Perhaps the most hilarious chapter in the book is entitled "Who was Captain Gusev? A Russian 'Freedom Fighter' between Minsk and Budapest", which deals with the celebration by the Rákosi regime of a Russian officer of that name, who was said to have agitated on behalf of the Hungarians when serving in the Tsarist army sent to suppress the freedom fighters. The Communists hoped thereby to improve the image of the Russians, who had after all dealt the fatal blow to the Hungarian cause in 1849 and were now again enslaving the Magyars. "Alexej Gusev" was actually a product of the fertile imagination of the "Muscovite" emigrant writer Béla Illés, but this did not prevent a street being named after him and a plaque being erected to him (Gusev) in Budapest (later even with a relief portrait of the great man) at which the Communist military annually laid wreaths. "When the Soviet President Mikoyan visited Hungary," adds Lendvai, "he did not forget to recall, in his speech before the Parliament, the legacy of Gusev and his heroic comrades" (in the meantime a number of Gusev´s brother soldiers had deftly been added to the story of the Magyar-friendly hero).

The mixture of cynicism, sadness and farce in this tale makes it a particularly poignant addition to the library of Hungarian irony. "Geniuses, Losers, *Lebenskünstler*" shouts the slogan on the book's back cover, a marketing man's description of Hungarians, if you like: yet tales like that of Gusev, or more especially like that of his creator, Illés, partly validate that image, even if it leaves out the pathos and

tragedy with which Lendvai invests the story of the Hungarians elsewhere in his book. It can in fact be disconcerting for non-Hungarians to discover how naive heroism and extreme cynicism co-exist in Hungarian life, sometimes indeed in the same person. Perhaps they are different sides of the same coin: the heroism has generally precipitated catastrophes, the cynicism has sweetened the process of survival. At bottom is an irresistible sardonic humour (much in evidence in the book under review), which does indeed constitute a sort of philosophy (or anti-philosophy) of life.The tragi-comedy of the Gusev story helps to appease the ghosts of horrors past, and make bearable the diseased normality of the present, by means of its surreal humour. Lendvai relates how eager young historians set off for Minsk from Budapest to research the life and deeds of Captain Gusev. This did not worry Illés, as he had already taken the precaution of announcing that the relevant archive had unhappily been burned to the ground. Despairing of finding material, the researchers were momentarily enthused by an article on Gusev that appeared in a Soviet monthly: avidly scanning the pages for sources, they swooped on the first footnote ... which however was sourced to "Béla Illés/Delo Guszeva". Illés lived until 1974, the Gusev plaque, however, much longer, although (or perhaps because) the truth had by then leaked out. A satirist offered an inscription for Illés's gravestone: Here lies Béla Illés, If it's true...

Lendvai's labour of (sometimes frustrated) love does not present a new picture of Hungary (he relies heavily on mainstream historians like Kann, Hanák and Deák for the framework of his judgements); but this was not his intention. He makes vivid use of quotation from secondary sources, particularly literary ones, which are of great assistance and interest to those with no Hungarian. If I have any criticism as a non-specialist reader, it is that the book is rather cursory in its treatment of the Kádár era, which the author might be expected to know in detail, and the narrative effectively ends in 1989. Perhaps the author was unwilling to immerse himself in the complexities, passions, disillusion and frustrations of politics since 1989, which all the same have steered Hungary into NATO and to the brink of the EU. But a decade is a long time in politics and more changes have been seen in this one than in the previous four. This is something later editions could remedy. The final chapter of the book ("Everyone is a Hungarian...: Geniuses and Artists") is a long résumé of (mostly emigrant) Hungarian achievement in the twentieth century, which repeats what are by now virtually clichès on the subject, without really examining afresh the puzzle of how such a small nation has given so much to the world. It is followed by a useful chronological table of events in Hungarian history, which is detailed and especially useful for the more confused and confusing periods, such as the Transylvanian independence struggle.

Overall the book is written with passion and wit and amply fulfills the aims modestly proclaimed by the author at the end of his Introduction: "As a Hungarian of Jewish extraction who, after forty years in Vienna has become an Austrian, I hope that I do not need to be cowed by any taboos, and that I can describe the Magyars with friendly, but also critical detachment". That is a fair characterization of his text. No one who is interested in Hungary should miss reading this book, which is why it should also be considered for translations into other European languages. ❧

Paul Griffiths

Music's Magic Show

György Ligeti Pieces New and Old

After completing his Violin Concerto, in 1993, György Ligeti spent a while producing only works for a solo instrument: several of his continuing series of Etudes for piano, and the Sonata for unaccompanied viola. Now suddenly he has come out with two pieces on a larger scale. One is the horn concerto he had long been promising to follow the violin's, the other a group of Sándor Weöres settings for mezzo-soprano and four percussionists. These songs had their first performances in November 2000, and were done again when the concerto received its première in January. Both works were repeated the next month in London, in delightful and astonishing performances by members of the London Sinfonietta, playing at the Queen Elizabeth Hall.

The horn concerto—called 'Hamburg Concerto' in honour of the city where it was first heard and where the composer has been living for the last thirty years—resembles the violin and piano concertos in being a succession of bright, offbeat musical conundra, though the movements are generally shorter than before: there are six of them, occupying barely more than a quarter of an hour in total. Also recalled here is Ligeti's Horn Trio, for the concerto is again a study in tuning and in the strange harmonies that can arise when the pure overtones of the natural horn waft into an equal-tempered context. However, the emphasis in the new piece—dated 1998–99 on the score—is much less on the sickliness, dislocation and disintegration of a traditional form, much more on brilliant, colourful, fantastical and fresh imagination.

Apart from the soloist, there are four horn players in the orchestra, all performing on natural instruments, as the soloist does in the second and third movements. The first movement, 'Praeludium', offers an immediate introduction to the horn world: one of Ligeti's characteristic slow-changing clusters, coming from the orchestral horn quartet. The soloist enters this cluster and slowly steps up from it, generating quick figuration that flames through the orchestra. After this, 'Signale, Tanz, Chorale' is a movement in three linked sections scored almost exclusively for the horns, soloist plus quartet.

The third movement also moves through three brief phases, 'Aria, Aksak,

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Hoketus', all playful, spirited and sly, and the fourth has four: 'Solo, Intermezzo, Mixtur, Kanon'. The solo is, of course, for the soloist, a slow song with microtonal inflections. But in the rest of this movement horn tone is conspicuously absent. The orchestra, excluding horns, makes a break—first in intensive music for strings and side drum, then in a beautifully scored organ-like hymn, then in the prestissimo canon—but cannot quite forget its silent horn-bearing companions. The fifth movement, 'Spectra', is a magical mystery tour of chords, arriving at a brilliant high pile of octaves, fifths and fourths. Then, in 'Capriccio', comes a compact, twitching stopper.

Of the Weöres songs, *Síppal, dobbal, nádihegedűvel* (2000), there are seven, most of them even shorter than the concerto movements. In them Ligeti responds to the poet, as in previous settings, with a combination of agility, precision, pungent expression and game-playing that seems to match the words, and the effect for Hungarian audiences must be hilarious and wonderful. On the other hand, the composer makes sure his jokes are shared with outsiders. He treats Hungarian almost in the way he treated the nonsense phonemes of his *Aventures* and *Nouvelles aventures* in the sixties. The singer in the first song, for instance, is gruff, loud and at the bottom of her register: she is a character—a grumpy peasant, perhaps.

Meanwhile, around her, the percussionists are in on the comedy—and the beauty. The second number is a dance song, a canonic game for voice and chasing marimbas; the third, 'Chinese Temple', combines Chinese-sounding words with the sounds of bells and gongs. The fourth is another rhythmic work-out for the singer and marimbas, while for the fifth the instrumentalists switch to mouth organs. In the sixth one of Ligeti's unplaceable folk songs is beautifully supported by vibraphone and marimba, and there is then a crackling finale.

As he approaches eighty, Ligeti is evidently in fine creative form. Can these new works—delectable, touching and humorous—at least be presages of the second opera he has been wanting to write?

Meanwhile the complete recorded edition, begun by Sony in the late 1990s and abandoned, has been taken up by Teldec as part of its New Line series, with the promise that all five remaining volumes will be out by 2003, the year of the composer's eightieth birthday. Promising in a different sense is the choice of performers. Jonathan Nott and the Berlin Philharmonic will present the big works (not least the Requiem), Reinbert de Leeuw and the Schönberg and ASKO ensembles the smaller ones, including those that appear on the first album (New Line 8573 83953-2): *Melodien,* the Chamber Concerto, the Piano Concerto and *Mysteries of the Macabre,* an offshoot from the opera *Le Grand Macabre* given here in its version for trumpet and chamber orchestra.

Only the last (and least) of these is new to the record catalogue. The Chamber Concerto of 1969–70 is a classic, recorded many times, and even the younger Piano Concerto has appeared on record twice before—once with the same soloist as on the new version, Pierre-Laurent Aimard, but with Pierre Boulez conducting the Ensemble InterContemporain. Still, the new performance is so musically lively and expressively rich—and so together—that it has to be heard.

Ligeti completed his Piano Concerto in 1988, at the end of a decade-long process of rethinking how his music might run. The work absorbs a lot of new influences: African drumming (bouncy irregular stresses within regular pulsing), the player-piano

studies of Conlon Nancarrow (mad machine music), European folk music revisited (songs and nursery tunes springing out of tonal nowhere and vanishing again). It also exults in a return to creative vivacity.

This is one of music's great comedies and magic shows, full of funny, strange and wonderful feats of imagination: surges of harmony, beautifully orchestrated, that disappear like coloured smoke, textures that get crammed fuller and fuller with raggle-taggle ideas that somehow match perfectly with one another, Ligeti being a master of the chaotic sublime, and rhythms that slip and slide through the mind that tries to get hold of them. It is all, of course, in the timing. Aimard's tempos are very close to those of his earlier recording, but the sense of divergent community is far superior in the new version. The other instruments fit around and with the piano almost as if they were extensions of it. Cues are picked up with alacrity. The dialogue is snappy.

This performance also reaches into the poignancy of the piece. The glorious bustle of the first movement trails away to leave a low string-bass note, ominously sustained. What follows, in the only slow movement of the work's five, is a lament—made with the simplest material, no more than a falling scale, but making that material sound new. The instruments step cautiously in a lonely world, subject to shocks. And what they have to say, in this performance, is haunting and touching. The climax, reached as keenings in the high treble, with the scale now rising, come to a pitch of shimmering intensity, is hair-raising.

A similar fullness of expression makes the performance of *Melodien* special. Written in 1971, this has always seemed one of Mr Ligeti's most spellbinding pieces, full of textural delight and of melodic lines—hence the title—that branch out and explore. Listening to the score is something like watching a plant grow. And from the perspective of history, the work brilliantly records a moment when western music was beginning to remember its nineteenth-century Romantic past and discover new possibilities in repetitive figuration. Postmodernism and minimalism are here in bud.

Again, De Leeuw's recording is exceptional in its expressive urgency and depth. Lustre of sound goes along with a passionate somberness, celebration with a sense of loss. The performance of the Chamber Concerto, too, is remarkable for its drama and pathos. The music means more than it has perhaps ever done before. ❧

Tamás Koltai

Good Old Days

Ferenc Molnár: *Liliom* • Dezső Szomory: *Hermelin* (Ermine)
Milán Füst: *Máli néni* (Auntie Máli)

In the early nineteen hundreds, theatres put on a large number of Hungarian plays. Those days it took two weeks to prepare a production. This was when the avant-garde was transforming the theatre in Europe, and directors were taking over the helm from playwrights. The importance of vision, music and motion grew immensely, and different -isms left their mark on the theatre. Constructivist or expressionist painters prepared stage designs, the very movements made by actors were set by choreographers, naturalism was superseded by stylization.

The majority of Hungarian theatres were left untouched by the revolutionary avant-garde. The effects of this can still be felt. The lack of inventive directors fostered parochialism. Abstract poetic approaches were forced off the stage. The imitation of reality suppressed its stylized representation. This was a literary theatre, unlike the "theatrical" theatre gaining supremacy elsewhere in Europe, with its mass-produced artisan-playwrights, who provided theatre managers with intellectually cheap pieces. Most playwrights thought success could be secured within a drawing room, where characters exchange nothings in the course of three acts. It did not really take much time to write and learn such plays. Contemporary programme notes offer a staggering variety of this nonvariety.

There are of course a few notable exceptions, the outstanding representatives of the Hungarian drawing-room comedy. They are different in many respects, but they are alike in that none of them is a reformer of the genre. They usually wrote about their own immediate social context, the bourgeoisie (usually the middle classes, sometimes the haute bourgeoisie), and they seldom ventured beyond it. They applied the conventional forms of drama, their emphasis laid on the dialogue rather than movement, at most they stylized common speech. Their professionalism within the confines of the genre they adopted is usually convincing. Their attitude was critical and their dialogue witty and ironic.

Of them, Ferenc Molnár (1878–1952) is the best known; his plays are still widely played both in and out of Hungary. His most popular play is probably *Liliom* (1910), well known in its English-language

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version, the musical *Carousel.* This happens to be the play in which Molnár abandons the world of drawing rooms. The action takes place in the Park on the edge of the city, in the funfair which provides entertainment for the poor, for soldiers on leave and housemaids. Liliom is a star here: he is the barker at the merry-go-round, and the girls come in flocks. Liliom is a showman-aristocrat, he lives on his "art." He could go and find a job, but he is proud of not having been born to be a janitor. He continues to hold this view even when he loses his job, because the lady owner of the merry-go-round, his mistress, throws him out on learning he has taken up with Juli, the housemaid. Liliom feels free in spirit, and after a time would even go back to be a barker, but in the meanwhile Juli becomes pregnant. He then commits a robbery, to get enough money to do what all the poor of Europe dreamt of at the time: to go to America. But he is identified, and before he is arrested, he commits suicide. Molnár does not stop the "suburban legend" here, but continues it in a tale-like manner. The dead merry-go-round man gets to a police station in heaven—a kind of purgatory—where he is granted a visit to Earth, sixteen years later, to see his daughter and perform a good deed, after which he can stand shriven before his creator. In the last scene Liliom meets his widow and her daughter. He has brought a star as a present. Though he is incapable of the compulsory good deed, and even slaps the girl's hand, the smack does not hurt, but feels like a caress. The "dear bad man," incapable of showing his love, is nevertheless granted redemption.

Molnár's play is not without feeling and this has made many a production sentimental, a hazard productions in recent years have tried to avoid. Lately two companies have presented the play, almost simultaneously. At the Academy of Theatre and Film it was directed by Andor Lukáts, who played Liliom in that notable production in which the scenery was a wooden roller coaster, and the hero rode it to the other world. It was to the credit of the director of that production, László Babarczy, to extract the play from the syrup, and to give sociological credibility to the poetry of the outskirts. Lukáts has salvaged some of the inspiration from that production. He too transposes the order of the scenes: the play ends with Liliom's death; the otherworldly scene and the visit to Earth sixteen years later are the visions of the dying man. The interpretation in all other respects is original. A canvas roof is drawn over a small section of the stage, the whole is strewn with sawdust and accommodates chairs for the audience. The atmosphere is that of a theatre on the outskirts. Two musicians, a double bassist and an accordionist play contemporary hits behind a tulle curtain. Striped sleeveless vest, hands in pocket, raffish bearing: the legendary myth of the merry-go-round aristocrat. Only a bit abstracted, ironic, viewed from the outside. The park legend appears between inverted commas, in a pulp edition: it bears the sweet-and-sad romanticism of funfairs at the beginning of the 20th century—as in an old photograph—but also conveys the curiosity of those looking at it almost a hundred years later.

The production reconstructs the myth of the merry-go-round man, the aloofness of the barker fop, who does not want to be a janitor, and dreams in heaven that he is some kind of suburban big shot. This Liliom can bear his feelings for Julika only masked, and reveals them only once, when he learns about the coming baby, on which they engage in an abandoned sawdust fight. The portrait of the housemaid is also realistic, of the simplest, finest, most intimate type. Everything happens inside: a determined, serious and stubborn girl ac-

knowledges her fate. She utters the words dryly, unmoved, not begging for compassion. When Liliom crawls off the stretcher to die—another rebellious gesture—she quietly buries herself beside him. The "pulp" reading must also include burlesque: purgatory, the hallway to a redeemable life, is represented ironically, a place where you can light up with the fires of hell.

In the production of the Krétakör Színház, Liliom also lights his cigarette at infernal flames, and he enters—which comes in the original sequence—with the exclamation "Good God!" What is more, this hallway to heaven resembles an establishment where corpses are washed, with white-smocked, rubber-booted angels standing by, waiting to treat the naked new arrival, who modestly holds his pack before his private parts—his striped vest sticks out like a prison uniform. This might suggest that Árpád Schilling, the best of the young directors to appear lately, has departed a long a way from Molnár, but this is only an appearance. The production has a consistent approach, producing a variety of meanings.

The small theatre is furnished like an old-world cabaret: at the entrance we are greeted by ushers in top hats and tails; one of them is the director, the other is the "manager," who at the beginning of the performance announces the play. Thus framed, *Liliom* is spiced with contemporary music hall songs. The highly stylized small stage is set with only a flight of stairs complete with banisters, and a bench, while the actors are made up to look something like clowns. This circus atmosphere is strengthened by costumes and acrobatic stunts, like a dialogue performed while hanging from the stairs, or some action on the banisters. All this belongs organically to the style, as do the songs, which the characters perform stepping out of their roles in a Brechtian manner.

Death here is poetic stylization, "theatricality" would not tolerate realism. Liliom is a boyish figure, almost a schlemiel. He is no showman aristocrat, more of a clown. He cuts his striped vest with a knife: this is death. He does not fall, remains sitting on the stage, and presses a water-soaked cloth against the imaginary wound, while Juli, in desperate fury, thrashes his back with another cloth. He does not stir from his sitting position, in which he awakes in the other world. This solution, beside avoiding direct emotionalizing (and thus being *dramatically* emotional), unifies the sections of the play, and does away with the rupture between the deep realist and "fairytale," the worldly and the otherworldly, parts, placing them at an equal distance, and presenting them as theatrical spectacle.

Dezső Szomory (1869–1944) was Molnár's contemporary, and his rival for some time, at least in Hungarian theatres. He was probably no smaller talent, but certainly less successful, with the exception of a few brief periods when he was lionized. The reason was his style which was, unlike Molnár's accessible realistic drawing room parlance, more difficult, stylized and abstract. They are different primarily in their language. Molnár's idiom is aphoristic, playful and ironic, while Szomory's is rapturous, ornamental and melodic. Szomory's plays are prose operas, his characters perform arias, their sentences are organized like music. His critical-ironical presentation of the bourgeois way of life is in no way inferior to Molnár's.

One of his best plays is *Hermelin*. Its principal figure is Tibor Pálfi, the successful playwright. He is preparing for the premiere of his new play in the Vígszínház (which a hundred years ago was the most fashionable theatre in Budapest, just as it is today). The celebrated, self-important and narcissistic author is surrounded by friends and women. Suddenly Hermin Tóth

(playfully nicknamed "Hermelin"-Ermine), appears on the scene, the young actress who had once had an affair with Pálfi. She now plays in a provincial theatre, and has only popped in, but "accidentally" has brought her son along, who is Pálfi's child. The man, who is enthusiastic about everything that is his own creation, is happy to offer—from his "Olympic heights"—to look after the child while she goes about her business. On the intoxicated night of the successful premiere he is ready to win back his old love, but at the decisive moment in the bedroom the current actress appears, who has hidden herself there. The reunion has to wait until the third act. A passionate scene prefigures further conflicts in their future life together.

As can be seen, the plot is negligible; Szomory's forte is not the originality of the story, but the extremities of character formation. The utterances of characters, from the protagonist to the theatre buff of a housemaid, verge on ecstasy. Everyone is enthusiastic, poetic, each smothers the others in figures of speech. We suspect self-irony, up to a point, though the figure of Pálfi is a self-portrait, or at least resembles Szomory. Insiders could recognize the author's apartment in the opening scene, the "eyrie" or "tower," furnished with works of art, carpets, velvet curtains and a harmonium, with a garden on the top floor terrace. Overrefinement and decadence have been staple characteristics of all productions of the play. In one the chief character entered the stage with a white dove on his shoulder, just as Szomory was rumoured to have received visitors.

Csaba Kiss's production in the Új Színház ignores the tradition. "Tibor, you dear, female soul," they trill to the masculine actor playing the main role, Attila Kaszás. Tibor Pálfi is a completely archaic figure, Kaszás is totally modern. Pálfi plays a style, he himself is a style: the memory of an age long gone. Kaszás's physique is today's. Pálfi stayed in an Art Nouveau past, like an illustration from an old programme displayed in the foyers of theatres as curios. Kaszás represents the turn of another century, its rough, anxious spirit. Pálfi's suffering is more like self-enjoyment. Kaszás's pursuit of pleasure is rather like a calvary. Pálfi is a hedonist. Kaszás is an ascetic. Pálfi is the patient of self-love. Kaszás, of self-scrutiny. Pálfi is comfortable. Kaszás is haunted.

The director has rewritten Szomory. Not his text, his spirit. This is no longer a play of self-generating intoxication, verbal ecstasy, lustful emotions gratified in prose arias, but of the desperate attempts of a prodigal man to regain paradise. Kaszás's Pálfi, amidst the cheap dazzle of success, sees a great passion slip by. Like an Onegin. The production powerfully represents the drama of life, the reclaiming of real emotions from false artistic affectation. Kaszás is fighting with an increasingly drier and wilder passion for his Hermelin, intoxicated tirades, self-satisfied trills and showing off gradually disappear from his performance. In the first act, as he enters from the bathroom, a turbaned towel and a loose dressing gown refers to the feminine in his decadent masculinity; by the end he is a sloppy, unshaven chap, howling for his partner. We are given an authentic and splendidly worked-out portrait of the wounded, hysterical, maddened lover, only to be surprized when in a breathless, stammering monologue, a truthful representation of catatonic suffering, the abandoned love remarks: "poor thing, he's intoxicated, giddy with his own words." There is no giddiness here. This production is about the abandonment of being an artist, as a pose, a style. According to the text, the action takes place in the "tower"; in reality it is the

ground floor. This is the bleak scene, in which, as one character puts it, "wriggles the love-misery of our mournful life."

The real great tragedian of the period was Milán Füst (1888-1967), a true poet of amorous and other kinds of suffering. It was only towards the end of his long life, in the sixties that he saw one of his plays produced. He too was a special personality, with "regal" consciousness, despite his lack of success. To be fair, success avoided him only in the theatre, as managers did not think his gloomy dramas would attract the (indolent) audience. His poetry and novels, one of the latter being *Story of My Wife,* translated into many languages, as well as translations of Shakespeare and writings on aesthetic were not uninfluential. His plays—*IV. Henrik* (King Henry IV), *Boldogtalanok* (The Wretched), *Catullus*—were discovered after his death. Indeed the comedy, *Máli néni* (Auntie Máli), was literally discovered: its manuscript came to light well after his death, in the eighties. It is still unknown whether it was lost or deliberately kept out out of the way. Füst, at any rate, makes no mention of it in the thousands of pages of his *Journal,* in which he scrupulously noted every little thing.

Auntie Máli is like a parody: managing director falls in love with young typist—the syrupy model of Hungarian plays and films in the thirties. Füst uses this model, but makes it much too complicated, intentionally. There is too much of everything in the play—too many misunderstandings, accidents, too much confusion. The syrup overflows, and produces the silly logic of irreality. Not only is the boss in love with the typist, or rather, secretary, but so are his son, the director and the accountant. The first misunderstanding concerns an illegitimate child, whose father is unknown. Or rather his identity might come to light, if things did not get confused. Characters become less and less certain about family ties, who is whose son, daughter, father, sister or brother. The main cause of confusion is the eponymous character, Auntie Máli, the poor relative, who frequents the director's office on the cadge. She never states, only asks, and the question usually goes "How do I know?", which strategy first confuses and then disentangles matters. Much to the satisfaction of everyone, and much to her own financial benefit.

In this play the bleak poet, who in his old age posed as a biblical prophet, shows surprising virtuosity in handling the dialogue of cheap comedies. Disconcerting reality, however, is not completely camouflaged by the frivolous surface. Yet the production of the Radnóti Theatre tries to subdue it, and the impression is usually of a mordant but entertaining character comedy. Director Tamás Jordán occasionally pushes the play towards the burlesque. He relies more on the comic inclinations of his actors than on his ability to give weight to the situations. The managing director's son, for instance, is a typical *Anglomaniac,* who dresses and behaves as he imagines young English gentlemen do. Hungarian actors seem to have a fondness for colourful, caricatural acting anyhow, and clearly enjoy roles in which they can pull out the stops. All the greater is then the contrast provided by the title role. The leading part is played by Mari Csomós, one of our best actresses. Her Auntie Máli is the long-suffering type, she has learned to adapt, to live from day to day. She improvises ideas, and extends an itching palm. Her eyes are now mischievous, now said or wise. She has her not very humble and not very contemptuous opinion about the whole company, the world, the luck of some people, and the awkwardness of others. About everything we are today likely to contemplate nostalgically, and call the good old days. ❧

Erzsébet Bori

Cold Spell

Béla Tarr: *Werckmeister harmóniák* (Werckmeister Harmonies).

"What the picture shows is the meaning of the picture"
Wittgenstein

Kocsma

Once again we're in a *kocsma*. An East European institution not to be confused with an English pub, an Italian bar or a French bistro. First and foremost it offers poor quality drink, two kinds of vinegary wine, strictly one kind of watery draught beer and "kommersz" hard liquor (produced from pure spirits with artificial flavouring); the function of what is served is to get the lower classes drunk swiftly, cheaply and painlessly. One of the first things the communists did was to rename these lowly establishments. First they nationalized them, then they numbered them and renamed them "drink shops". But far from doing away with the lower classes, the new regime multiplied them, and the demand for the *kocsma* grew and grew. From its very beginnings, the *kocsma* has had its tribulations; today it is a besieged castle in the market economy, even if it manages to put up a brave front. In Hungarian literature it can be tracked down the ages from outlaw ballads via Petőfi to the contemporary short story writer Sándor Tar.

No two *kocsma* are the same. And there is no Béla Tarr film without one. *Werckmeister Harmonies* starts off with a *kocsma* scene. Hágelmayer the innkeeper douses the flames in the stove with water and calls out: "Closing time, gentlemen." The padded jacketed, booted congregation by this time is well away, they cling to their last glass or try to cadge one more for the road, then a benumbed brain clears and someone in a slurred voice says: Valuska. There's still someone to wait for, still a hope for something to delay an exit into the freezing night, the lonely tramp home.

János Valuska (Lars Rudolph), postman and newspaperboy, tramps the town in his heavy serge coat, his huge bag on his shoulder. His rounds often take in the *kocsma,* where he enthusiastically lectures on the wonders of the universe to the drunken regulars. The highlight and ceremonious ending to the evenings is a grotesque *kocsma* planetarium in which miners, drivers and plumbers are made by Valuska to personify the Sun, Moon and Earth and dance the mystery play of a solar eclipse. For a little while the jabbering dies down, all that is heard is the shuffle of

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heavy boots and Valuska's impassioned voice, then the sound of music joins this captivating sight, and the viewer is jerked with magnetic force into Béla Tarr's universe.

The location is a market town on the plains, somewhere in the eastern marches of Hungary, a town in a permanent state of disintegration. The chaos that is looming cries out for a strong hand behind the scene of the new system, to allow the continuation of an existence without purchase or focus.

Whale

To stay with the *kocsma*. After leaving it, Valuska goes to the post office newspaper sorting room and continues his usual evening round delivering newspapers. Whoever he meets talks about supernatural phenomena and calamitous events, which are all ominous premonitions of an impending disaster, revolution, earthquake, the end of the world. One element recurrs: a travelling circus travelling the length and breadth of the country with a blue whale, followed by a shady threatening mob. In the street Valuska catches sight of a half-literate poster: a "Fantastic attraction", "The world's biggest whale and other SECRET sensations of nature." All of a sudden, in this deserted, silent small, landlocked town only lit by an occasional and faint street lamp, Valuska hears a distant rumble, which becomes stronger and stronger as if it were approaching. In time the noise becomes more distinct, a rumbling and a rattling; after a long while, the source appears, a semi-trailer, and high up in the illuminated driver's cabin, a seemingly human figure, tiny at least in comparison to the huge corrugated iron trailer. Valuska stands at the edge of the street until the never-ending length of the container has rattled past him and, as slowly as it came, disappeared into the darkness, its din gradually receding.

Valuska looks up the scholarly Mr Eszter (Peter Fitz), former headmaster of the music school, who is still held in respect in the town, though, disgusted by the chaos of the world, he has long since retired. He doesn't put a foot outside his house which has seen better days, and to which only Mrs Harrer, who comes to clean, and Valuska, who looks after the old man, have free access. Only with his young friend Valuska does György Eszter share his revolutionary theory to the effect that the godly harmony of music is in reality based on lies, on the system of tempered, in other words, falsified notes. (Hence the film's title, taken from the middle chapter of a novel by László Krasznahorkai *Az ellenállás melankóliája* [The Melancholy of Resistance, translated by George Szirtes. Quartet Books, London, 1998], the section on which Béla Tarr's film is largely based. Andreas Werckmeister, in spite of the misleadingly evocative name, actually existed, an older contemporary of Bach's. "He suggests the compromise of four tempered fifths, and with this he takes the step before last on the road to the even vibration order of tonality," a German musical encyclopaedia says of him.)

In the course of his rounds Valuska several times crosses the town's market square, where shabbbily dressed people gather in numbers. The destitute of the urban fringe and the surrounding farmsteads are waiting for the travelling company, but there is no trace of excitement on their faces, they stare into space in ominous silence. There are small bonfires here and there in the square, around which they cluster in the freezing winter night, swigging schnapps.

Dawn is breaking and Valuska, on his way home now, once again crosses the square. The crowd has noticeably grown;

some have boards under their feet to stop them from having to stand on the ice-cold stone. The circus van is there, but nobody seems to take any notice of it, as if this was not the reason they had come for. Only Valuska buys a ticket. He walks alone round the enormous stuffed body glimmering in the twilight, until he reaches the whale's huge and wonderful eye gleaming in the light.

Mrs Eszter

Still under the spell of the experience, Valuska then hurries home to his room in the shoemaker Harrer's summer kitchen, where he has an unexpected guest: Madame Tünde, Mr Eszter's long separated first wife. She (Hanna Schigulla) has arrived with a suitcase and an ultimatum: if Eszter refuses to take on the post of chairman of the committee for order, she will move back in with him this very evening. Mrs Eszter is currently the police captain's mistress, and she feels the time has come for her to become a power factor in the town and at the same time take revenge on a husband who had shown her the door. The road to power runs through the generally respected György Eszter via Valuska. The old man of course wants nought of his wife or the campaign for order; all he wishes is for everything to remain as it is. That is what makes him vulnerable, and, in the vain hope that this is possible, he is willing to leave his house and seek out his deeply despised fellow citizens in the interests of organizing the committee for order.

Valuska hurries to bring the good news to Mrs Eszter who is in the throes of trying to sober up the police captain to a state where he will be able to work; she's no longer interested in what Valuska has to say; the campaign for order has lost its urgency. She does, however, give Valuska two tasks: to go to the home of the widowed captain and put his children to bed, then to sound out what the people gathering in the square are up to. The Radetzky March is blaring on the radio. The boys, six and eight years old, have put on their father's uniform and, banging away with saucepans and lids, are making such a din that they don't notice Valuska's arrival; and when they do, his voice doesn't get across to them over the infernal racket. Valuska just stands there at a loss, then leaves, almost as if he were escaping.

It's late in the evening when he manages to get to the market place. He is greeted by a scene similar to the previous evening's, but now there are masses of people and the atmosphere has changed markedly, there's a feeling of tense expectation. The unwieldy circus truck is locked, but Valuska slips in through a gap in the container, so strong is his urge to see the whale again. He thus overhears a fierce argument between the director and the mysterious Prince, whose subversive ideas—which stir up the followers of the company every time—are relayed by an interpreter. The Prince is a deformed dwarf, carried around in the arms of the interpreter and general factotum when he wants to talk to the people. The distraught and completely confused Valuska takes one more look at the whale's eye, but this time he is met by no more than a dull, lifeless gaze.

After that, in the square, he is swept along by the surging crowd. There is no escape: he has to be witness to a wave of destruction that lasts all through the night. The people, armed with sticks and iron rods, break into the town hospital, smashing the equipment and instruments and turning the patients out of their beds. The riot ends at dawn. They break into a shop, but no longer have the strength to systematically shatter the shining row of washing machines. On his way home

Valuska sees the dead body of his landlord, Harrer, the shoemaker, in a backstreet; from Mrs Harrer he learns that he is a wanted man; he is on the occupying soldiers' list and must escape. A helicopter pursues Valuska as he stumbles along the railway tracks leading out of town, in a desolate winter wilderness. In the last scene we see him again in a mental ward, his eyes are lifeless and he's mumbling to himself. He doesn't hear what Mr Eszter, sitting on his iron bed, is saying about their life together in the garden shed (in the meantime Madame Tünde has taken over the house) where they'll be a bit cramped because of the recently retuned piano.

Film

Discounting this epilogue, the film tracks the events of one day and two nights, from the evening of the *kocsma* closing time to the dawn of the day after. As a result of the events, chaos breaks out, then the new power inflicts order. The seemingly very important "historical" turning point is caused by insignificant and petty things —a country travelling circus, a revengeful wife—and like a self-fulfilling prophesy, they take place in this town where everyone has visions of an imminent catastrophe, a final judgement. ("They think because they are frightened," Valuska reads in the diary belonging to the "ideologist" of the riot which he finds in the washing machine shop.) But what comes about isn't the end of the world, it's not even revolution, it's only the usual temporary breakdown in the daily round. After letting off tired steam and a slight loss of blood, the poor of the surrounding regions, the local lumpenproletariat and even the honest citizens return to their earlier activities, to drudgery and the *kocsma*. A few chairs change owners in offices, and the blind order of existence returns to the daily grind that is just as senseless and aimless as the one night of mob rioting. Life has no variety, the wheels of history don't turn, the mills of destiny do not grind. Here we have the everlasting, unchanging and irredeemable human condition, of those who are unaware, yet still do it, who do their work, wash, cook, clean, obstruct or permit the chaos, multiply and decimate their own kind. A more powerful force than feverish human activity is the winter that has set in unusually early and for good, and is numbing the whole world.

There is nothing symbolic in *Werckmeister Harmonies*. Things are what they seem. Valuska isn't Hermes; it's not wings he has on his feet, but boots. The Prince and the circus with the whale do not represent hell (or let it loose), they just apply the usual brainwashing and manipulation. The long vehicle has an equivalent in reality: in the nineteen-fifties enormous whales were dragged all across the regions under Soviet occupation; the model was the same size and shape as an intercontinental ballistic missile and there was no other aim of the attraction than to test out the roads that were navigable with a missile. (This may be just an urban myth, but it is believable and typical of the time and place.)

Tarr insists that in his films the story is not the important part. He doesn't tell a story, he films a human situation. Taken from his viewpoint, he is perfectly right. He relates and shows grieveous facts in realistic places, furnished with things that exist —or have existed. Yet this isn't a ready-made world, it's a created one. Krasznahorkai's novel and Mihály Víg's music—he composed two string quartets, or piano quintets to be more exact, for *Werckmeister Harmonies,* and these two, in themselves repetitive pieces, can be heard at times throughout the film.

Time

The revelation of a previous Tarr and Krasznahorkai collaboration, the seven and a half hour *Sátántangó,* (Satan's Tango) was the treatment of time and space. He had to create a film in a form that had not been used before. (We only know two examples of monumental, several hour novel adaptations like this in film history: the full version of Stroheim's *Greed* has been destroyed, while Fassbinder's *Alexanderplatz* relates an eventful story covering a long period of time and involving many characters, and thus is not comparable with *Satan's Tango* which, discounting the epilogue, takes place on a single day and two nights in very few locations and with a handful of characters.) One of the greatest challenges for *Werckmeister Harmonies,* which spans exactly the same amount of time, was to use the same structure for a normal length film, while retaining the special time treatment of *Satan's Tango*, i.e., the dramatic condensation of the elliptic narrative and the real-time tracking of events. Of course every film works with this dramaturgical method, it is a convention the use of which goes unnoticed. But not with Tarr. Let us try to consider a seven and a half hour film in which one take is longer than a normal 90 minute film, and during this time we are watching one character, a fat doctor, for instance, who does nothing but write and drink, grunt and engage in heavy breathing! One of the solutions in *Werckmeister Harmonies* is that, unlike the earlier film, it has a protagonist, we follow him—"we're with him to the end", says Tarr. And we more or less only meet the other characters through Valuska. We don't just follow him, we see the events and other people through his eyes. And Valuska's simple-minded, childish outlook simplifies and clarifies things to a great extent and also gives them depth and tension.

The other aspect is the way the novel has been adapted. *The Melancholy of Resistance* has three chapters. The screenplay treats two middle parts, one entitled "Werkmeister Harmonies" and the other "Treatment". Tarr follows the novel with the greatest possible accuracy and detail (the script he co-wrote with Krasznahorkai), from the scene at the *kocsma* to Valuska and Mr Eszter's scene in hospital. As for detail, the possibility is afforded by the film's ability to create atmosphere as well as taking conscious advantage of the differing characteristics of the novel and the film. For instance, in place of a description of several pages a single shot is often sufficient, whereas a half sentence in the novel—"he said hello in the newspaper sorting office and drank a hot cup of tea"—needs eight to ten minutes in the film.

Man

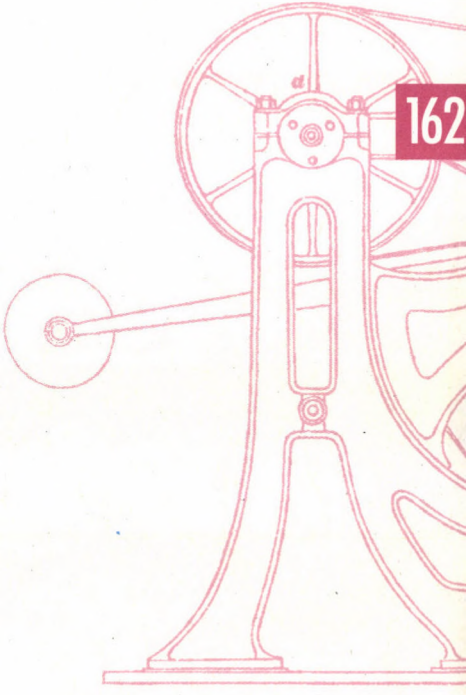
The film makes one of its essential changes on the Harrer couple. In the novel they are two obscure figures. Mrs Harrer, under the pretext of doing the housework breaks, shatters and steals in Mr Eszter's house. The alcoholic Harrer takes on the role of informer for Mrs Eszter, who was formerly his lover. In the film the Harrers are honest, hardworking people. The shoemaker doesn't die as a result of his voluntarily accepted shady role in the events, but as an innocent victim who has nothing to do with the thing he dies for. His body lies there in a backstreet, not far from their home, just a few paces from where Mrs Harrer is standing in the doorway unsuspectingly berating her husband for staying out all night. The second significant change is the hospital scene, which is the film's most outstanding moment (we could call it the climax,

but in my reading, given the additional circular structure of the linear tracing, there are several climaxes). This one episode of the systematic destructive work of the enraged crowd against their own town features in the film. We watch as the people go from room to room smashing up the fittings, beating up patients whom they have turned out of their iron beds onto the floor. The scene is violent but not naturalistic, because two directorial decisions lead it towards stylization: one is the placement of the camera, which in a starkly unusual way shoots the scene and follows the action from behind and in part from above; the other is that we don't hear human sounds, groaning, wailing, crying out, only the noises made by the objects. According to the novel the vulnerability of the patients puts a brake on the mob, the complete lack of resistance simply dampens their spirits. In the film they are arrested by a naked old man who seems to be at death's door and on whom they see very accurately the workings of a superior force. There is no need for them, their desperate destruction is utterly senseless, because it's not them who pass judgement, they can only hasten it. The two ringleaders look at each other, turn their backs without a word and, all at once, there they stand facing the camera (us). An elevated, at the same time awkward moment. This is stepping over boundaries in a film that doesn't show the deformed Prince or bloody violence let loose. This scene needs to be accounted for. How can Man be shown in a film which is saying that if there is still an honest man left in Niniveh, he will not save the town, it's he who has to die. The town is irredeemable anyway. "I am a sad researcher," Krasznahorkai says of himself, "who examines what makes everything as terrible as it is." Tarr if anything sees the world as even more hopeless than Krasznahorkai does, but he has more sympathy for man struggling in the world. This sympathy is an awkward reminder of a certain thing that we haven't been able to discuss without shame or embarrassment since the first half of the last century: humanism. In the 20th century man forfeited for good all the confidence that had been bestowed on him. What is dreadful on the one hand, is ridiculous on the other. Tragicomedy is the only genre in which we can still recognize ourselves.

Mr Eszter first of all escapes into music from the filth of life, then, withdrawing from the world, he throws himself into the passionate search for truth, the merciless denial of harmony, to content himself in the end with the anything but elevated, minimalist programme of caring for Valuska. But before that, he retunes his piano. ❧

Guides to Hungary most often still try to sell the country as the land of Tokay wine, paprika, goulash, Gypsy music and Hortobágy herdsmen, despite the fact that the cultural heritage of the country, of which not only foreigners but Hungarians as well are insufficiently aware, is of far greater significance. For how many of you knew, for instance, that matches, wolfram-filament or krypton-filled light bulbs, the ball-point pen, Rubik's cube, alternating current technology, streamlined planes, radioactive tracing, the atomic reactor, electronically programmable computers, time-sharing e-mail networks, the BASIC programming language, the word processor Word for Windows, the Pentium microprocessor or the Lunar Rover were all "born in the minds of people whose cradle rocked in Hungary"?

From Balázs Illényi: Celestial/Extraterrestrial Minds, pp. 135–140.



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