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Michał Hieronim Leszczyc-Sumiński (1820-1898) - a Biography and Psychological Portrait of the Polish Naturalist and Explorer

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MICHAŁ HIERONIM LESZCZYC–SUMIŃSKI (1820–1898)
– A BIOGRAPHY AND PSYCHOLOGICAL PORTRAIT
OF THE POLISH NATURALIST AND EXPLORER

Introduction

In January 1848, Polish Count Michał Hieronim Leszczyc–Sumiński announced in Berlin the results of his pioneering observations on the process of fern reproduction. This breakthrough botanical work constituted one of the most important discoveries in natural science of the entire 19th century. Count Sumiński described a phenomenon previously unknown to scientists and paved the way for further research on the sexual reproduction of lower plants. Upon its publication, the discovery met with immediate and strong criticism by academia. Sadly, even today, the contributions of the young Polish researcher to modern botany are sometimes diminished or even overlooked in less conscientious publications¹. For many years, the count himself and his role in the advancement of natural sciences have been marginalized, even forgotten. Only recently have the facts of his life been compiled and supplemented, thus restoring his rightful place in the history of botanical discoveries².

The family background and biography of Count Sumiński

Two brothers are considered to be the progenitors of the noble house of Sumiński: Franciszek and Wojciech, who in 1325 owned the lands of Sumin in Kujawy and were the founders of a parish and a hospital. In approximately the same period, the Sumiński's *Leszczyc* blazon was created, depicting a *bróg* [Dutch barn], i. e., a thatched roof supported by four pylons. According to le-

¹ Sumiński's discovery was noted, among others, in the following monographs about the history of science: M. Möbius (1937), R. Taton (1961), K. Mägdefrau (1973), A. G. Morton (1981), I. Jahn, R. Löther and K. Senglaub (1985). In light of the above, the works of such authors as J. Costantin (1934) or C. Singer (1959) have to be reviewed unfavorably, as they disregard or even ignore the contributions of this Polish scientist, and favor those of his followers (particularly W. Hofmeister, who merely confirmed and continued the research initiated by Sumiński). The pioneer work of Leszczyc–Sumiński was described in R. C. Moran, *A Natural History of Ferns*, Timber Press, Portland 2004, p. 21.

² The very scarce biographical facts about Leszczyc–Sumiński were further obfuscated due to the publications of B. Hryniewiecki (1937, 1939, 1969), who unsuccessfully attempted a compilation of unverified facts and unjustified hypotheses about the Polish naturalist. The data were corrected and supplemented in the course of many years of research conducted by the author of this article. See C. W. Domański, *Michał Hieronim hr. Leszczyc–Sumiński. Psychobiografia polskiego przyrodnika i miłośnika sztuki* (unpublished doctoral dissertation, 1995).

gend, the blazon represents the hermitage of Blessed Bogumił, which stood among four oak trees.

Piotr Sumiński, the grandfather of the Polish botanist, was the most distinguished member of the family. He was a politician and a member of the pre-partition parliament, and a supporter of the last king of Poland, Stanisław August. In the last years of his life, he served as the voivod (governor) of Inowrocław. His fourth wife, Franciszka Hołyńska, gave birth to a number of children, including two sons who each had a part in the history of 19th century Poland. The older son, Antoni Sumiński, served for many years as the general director of the Police and Post Offices in the Kingdom of Poland, and, after the collapse of the November Insurrection, as a member of the State Council in the Kingdom of Poland. The younger son, Jan Sumiński, chose to pursue a military career. He joined the ranks of the Polish army and took part in both the war between Poland and Austria (1809) and the Napoleonic campaign against Russia (1812). He earned the rank of major and was awarded the Order of Virtuti Militari for his exemplary bravery. He was the owner of two sizeable land properties, Ošno and Grabie, and he also earned profits from various enterprises, e. g., supplying lumber to the salt works in Ciechocinek¹. In 1817, he married Julia Józefa Dąbska, the daughter of the last Inowrocław castellan. They had three children. The daughter, Fanny Nymphe, married a German count, Amand von Gaschin-Rosenberg. She was a pianist and a composer, and a student of Franz Liszt, Sigismund Thalberg, and Adolf von Henselt². She composed waltzes, mazurkas, polkas, harmonic poems, and even military marches. She was also an active philanthropist, known for her charity work in Silesia, and a Dame of the Order of Malta. The older son, Aleksander Kryspin Sumiński, was a landowner in Królestwo Polskie, and, after 1852, a Prussian citizen.

Michał Hieronim (Michael Jérôme) Sumiński was the youngest child in the family. He was born on 29 September 1820 at Ošno near Toruń, and was baptized on 16 December of the same year at the parish church in Służewo. He spent his earliest years at his parents' country estate, moving in the winter to Toruń, where the family had a house inherited from his mother's family. In Toruń, he studied with a private tutor employed by the Sumiński family between 1825 and 1830. On 12 March 1830, together with his brother, Michał began his studies at the Toruń Gymnasium as a student of the class called the *small* Kwinta [fifth]. The school's curriculum put great emphasis on natural sciences. In fact, the gymnasium had at its disposal a botanical garden, convenient for classes and also the inspiration for Sumiński's future interest in botany. During those years he also took regular classes in drawing and painting taught by Professors Karl Neuscheller and Friedrich Völcker. In 1837, Sumiński transferred to the newly opened gymnasium in Chełmno, a school with a humanist curriculum, where he studied for two more years, i. e., until the autumn of 1839. He did not take the final exams, thus making it im-

¹ S. Paczkowski, *Służewo na Kujawach Wschodnich. Zarys dziejów*, Lega, Włocławek 1999, p. 106.

² A. Cohen, *International Encyclopedia of Women Composers*, 2 vol., Books & Music, New York 1987.

possible for him to earn a doctoral degree during university studies, which he soon began. This omission was probably due to the unexpected death of his father and the sufficient financial resources he left to support his entire family. In September 1839, the Family Council assigned his mother's relative, Ludwik Biesiekierski, to be Michał Sumiński's legal guardian. On 24 June 1840, Sumiński left for Berlin to continue his education. He matriculated at the Philosophy Department at the University of Berlin. Most probably he was introduced at that time to Alexander von Humboldt, whose help allowed Sumiński to connect relatively easily with the court of the Prussian King Frederick Wilhelm IV.

In December 1840, he arrived in Włocławek, where, at the notarial office of Leon Kielczewski, the inheritance left by his father Jan Sumiński was distributed among the family. With these extensive financial resources, he was able to continue his studies in Berlin and lead a life of the highest material standards. In the capital city of Prussia, Michał participated in university courses devoted to natural and medical sciences and perfected his artistic skills, most likely at the atelier of one of the most acknowledged professors of painting. In the spring of 1843, Sumiński began proceedings to change his surname to *Leszczyc–Sumiński*. His request, addressed to the king of Prussia through the agency of Minister Sayn–Wittgenstein, was accepted. In November, he was handed a written consent by Frederick Wilhelm IV in Charlottenburg, allowing him to legally use the name *Leszczyc–Sumiński*. The act issued to *Count Sumiński* was simultaneously a legalization of his countship. The Prussian heraldry recognized the document as the equivalent of a count's nomination. In June 1844, Sumiński finished his studies at the University of Berlin. Due to the lack of a gymnasium finals certificate, he could not continue his education for longer than eight semesters. In that year he also painted and presented to the king of Prussia a painting entitled *Mohammed Writing the Koran during the Hegira*. The painting was exhibited for a period of time at the Bellevue royal gallery in Berlin, and was later passed on to Hanover, where it decorated the Leineschloss gallery until the city's bombardment in 1944.

In 1845, Sumiński began a cooperation with two Berlin botanists: Julius Münter and Adolf Oschatz. The Polish count helped them prepare drawings presenting microscopic details of plant anatomy. At the same time, he tried to join a naturalist expedition to subtropical countries, which was organized by one of Berlin's scientific associations. In the end, however, the expedition did not take place, and Leszczyc–Sumiński devoted himself to independent microscope studies of fern plants that he himself grew from spores. As the processes he was observing had not yet been mentioned in the specialist literature, he prepared a detailed description with illustrations documenting the discovery. The documentation, together with permanent slide preparations, was presented to three German botanists: Christian Gottfried Ehrenberg, J. Münter, and Heinrich Friedrich Link. The first two were enthusiastic about his discoveries. Münter announced them in December 1847 during a meeting of the Nature's Friends Society in Berlin and later, in January 1848, published a summary of

his presentation in *Botanische Zeitung*¹. At the same time, Ehrenberg submitted a report on Sumiński's discovery to the Berlin Academy of Science. The report was published in the academy's statements together with a short article signed by Sumiński². In the same year, he published a comprehensive documentation of his study, including the description and illustration of the results of his research on fern reproduction. The publication was entitled *Zur Entwickelungs-Geschichte der Farrnkräuter*. It was printed by Rudolf Decker's court publishing house³. It was not Sumiński's last publication, as the article on fern reproduction which was signed by him was later reprinted in December 1848 by *Flora* magazine and in 1849 a summary of his work was printed by *Annales des Sciences Naturelles*, compiled and translated into French by Pierre Duchartre⁴.

Sumiński's *Zur Entwickelungs-Geschichte ...* consisted of eight chapters. Apart from the introduction, they included *The Structure of Pteris Serrulata Sprout, Sprout's Germination, Further Growth of the Germinating Germinal Cell, Prothallium, Fern's Sexual Apparatus, Sprout, a Germinating Plant, and Further Development of the Young Plant*. The comprehensive description of the observed phenomena was illustrated by six plates, where he placed his own detailed drawings of the newly discovered structures along with their physiological transformations. The drawings confirm the conscientiousness of the study.

The discovery made by the Pole shed new light on the reproduction of plants until then considered to be *cryptogamic*. Linnaeus, as is commonly known, classified plants on the basis of having a blossom, which he treated as a visible sign of their sex. In his work entitled *Species plantarum ...* (1753) he contrasted phanerogamic plants (Phanerogamae) with cryptogamic plants (Cryptogamae), which included algae, fungi, mosses, and ferns. He described them as organisms whose *mechanisms of fructification are concealed or unknown*⁵. Consequently, a number of botanists rejected the possibility of sexual reproduction of these plants. Sumiński's discovery was, therefore, revolutionary in the sense that it undermined theory recognized for over a century and challenged Linnaeus's order of plant classification. His observations not only proved the fact of sexual reproduction of the so-called lower plants, but also disclosed the complexity of a phenomenon virtually unknown to botanists.

With his discovery, Count Leszczyc-Sumiński proved that a fern sprout is

¹ J. Münter, *Zur Entwicklungsgeschichte der Farrnkräuter* in: *Botanische Zeitung* 3, 21 Januar 1848, p. 41.

² J. Grafen Seszczyc[sic]-Sumiński, *Zur Entwickelungs-Geschichte der Farrnkräuter* in: *Bericht über die zur Bekanntmachung geeigneten Verhandlungen der Königl. Preussische Akademie der Wissenschaft zu Berlin*, Januar 1848, pp. 22–24.

³ J. Grafen Leszczyc-Sumiński, *Zur Entwickelungs-Geschichte der Farrnkräuter*, Verlag der Deckerschen Geheinen Ober-Hofbuchdruckerei, Berlin 1848.

⁴ Leszczyc-Sumiński, *Zur Entwicklungsgeschichte der Farrnkräuter* in: *Flora* 45, 7 December 1848, p. 728; le Comte Leszczyc-Suminski, *Sur le développement des fougères* in: *Annales des Sciences Naturelles, Botanique*, III sér., 1849, pp. 114–126.

⁵ J. L. Larson, *Reason and experience. The representation of natural order in the work of the Carl von Linne*, University of California Press, Berkeley 1971, pp. 57–58.

not equivalent to a seed, as had wrongfully been thought until then. In actuality, two structures simultaneously grow on the prothallium and both of them take part in a process leading to the creation of the filial plant. One of the structures (antheridium) produces *spiral threads* (sperm). The threads, which had been observed previously by Carl Wilhelm von Nägeli (who was unable, however, to explain their function), move towards another structure, until that time unknown to botanists, which develops on the prothallium. That structure is the archegonium. The threads connect with ovule within, and as the result of the process, which is an act of impregnation, division and development of cells takes place. They form a young plant. Therefore, the reproduction of a fern takes place in two separate phases.

The publication of the research results and Sumiński's discovery of the fern's reproductive cycle caused a considerable commotion among botany academics. One should remember that this amazing discovery was made by a young, unknown amateur and, to make it worse, one of Polish origin. Some scientists reacted hysterically as they realized that Sumiński's single observation was more valuable for the future development of botany than their entire life's work. A campaign against the Polish naturalist began in the German press, participated in most actively by Link, Matthias Jacob Schleiden, Albert Wigand, and Herrmann Schacht.

Link openly criticized Sumiński during public lectures in Berlin. One of the Polish naturalists, Julian Zaborowski, who attended one of the presentations, remembers the event: *Sumiński (...) discovered ferns to be phanerogamic (...) In one of his lectures, Professor Link in Berlin dismissed Sumiński with a short joke, accompanied by a shrug of his shoulders to express disdain*¹. Schleiden in turn, conveyed his aversion in a botany textbook, where he wrote that *Lively imagination, most likely accompanied by a faulty microscope and incorrect preparation of samples, have led Sumiński to the curious belief that the mobile spiral threads enter the fern's germinal organs*². Equally malicious texts were published by Wigand in *Botanische Zeitung*. While commenting on the factual value of Sumiński's thesis, he posed the following question: *How could a dignified person and a careful observer have created such a scientific tale?*³ A similar attitude can be found in Schacht's publications in *Linnaea*, in which he publicized the results of his research conducted with the use of *the most advanced microscope*. In the conclusion to the article, which naturally did not confirm Sumiński's results, Schacht wrote: *Die Befruchtung der Farrnkräuter, wie selbige vom Grafen Leszczyc[sic]–Sumiński angegeben ward, ist demnach mehr als unwahrscheinlich, und somit die Stellung der Farrnkräuter unter die Phanerogamen keinesweges gerechtfertigt*⁴.

¹ J. Zaborowski, *Czy kwitną paprocie?* in: *Przyroda i Przemysł* 30, 1857, pp. 235–236.

² The quotation behind: B. Hryniewiecki, *Michał Hieronim hr. Leszczyc–Sumiński i jego dzieło o rozwoju paproci* in: *Prace Komisji Historii Medycyny i Nauk Przyrodniczo–Matematycznych*, 1, 1939, p. 19.

³ A. Wigand, *Sur le développement des fougères* in: *Annales des Sciences Naturelles, Botanique*, III sér., 1849, p. 149.

⁴ H. Schacht, *Beitrag zur Entwicklungsgeschichte der Farrnkräuter* in: *Linnaea. Ein Journal für die Botanik in ihrem ganzen Umfange* 6, 1849, p. 789.

It must be appreciated, however, that a small group of German scientists, with Ehrenberg and Münter among them, defended the Polish researcher, as they realized the importance of his observations. For Ehrenberg, Sumiński's discovery supported his own research on the sexual processes in fungi. Ehrenberg expressed his feelings in a letter to his friend, Karl Friedrich von Martius, where he refers to the young Pole's discovery: *This amazing discovery truly moved me, as Sumiński's opinion convinced me of the authenticity of the matter*¹. Münter's enthusiasm, on the other hand, took a different, almost obsessive form. As remembered by one of his students many years later, in his late years Münter circulated a thesis that he himself had made the epochal discovery of the fern's reproductive processes, and Count Sumiński, whom he described as a *crook and rascal* had stolen his observations and published them under his own name². The truth can easily be established while reading the German botanist's article of 1848, where he refers to the Polish researcher's discovery with high regard and does not make any authorship claims whatsoever.

In following years, the research of such German scientists as Wilhelm Hofmeister and Carl Eugen von Mercklin and later, among others, Edward Strasburger, conclusively confirmed the correctness and importance of Sumiński's observations³. He was also rewarded by admittance as a member of scientific associations. In 1848, he became a correspondent for the Royal Botany Association in Regensburg, and a year later for the Natural Sciences Department within the Scientific Association in Cooperation with the Jagiellonian University in Cracow.

It seems that the aggressive attack by German scientists discouraged Sumiński from further naturalist research. He focused on improving his artistic skills and pursuing a collector's passion, and, most importantly, developing closer relations with the royal court in Berlin. In 1851, King Frederick Wilhelm IV nominated him for the position of Prussian court chamberlain⁴. In the same year, he purchased the castle and lands of Tuczno in western Prussia, which secured him a considerable income, as apart from a number of granges with arable lands he now also owned a water mill and a distillery. However, he was spending the majority of his time away from his property, traveling across Europe to France and England. In 1851, he visited the Crystal Palace World Exhibition, which was devoted to the development of the British Empire. During his stay in London he painted and was socially active. It was then that he met George Hudson, a popular member of the English Parliament. Hudson was a wealthy entrepreneur, a railway pioneer (known as *the Railway*

¹ J. Hanstein, *Christian Gottfried Ehrenberg. Ein Tagwerk auf dem Felde der Naturforschung das neunzehnten Jahrhundert*, Adolph Marcus, Bonn 1877, p. 98.

² C. L. Schleich, *Besonnte Vergangenheit. Lebenserinnerungen (1859–1919)*, Ernst Rowohlt Verlag, Berlin 1921, pp. 139–140.

³ E. Strasburger, *Zapłodnienie u paproci* in: *Gazeta Lekarska*, 6, 8 VIII 1868, pp. 81–86.

⁴ *Königlich Preussischer Staats-Kalender für das Jahr 1852*, Verlag der Deckerschen Geheimen Ober-Hofbuchdruckerei, Berlin 1852, p. 28.

King)¹. Sumiński proposed to his daughter Ann Elizabeth.

In January 1854, Michał Hieronim acquired the license necessary to marry his fiancé, and on April 19 the same year they were wed. The ceremony, conducted according to the Anglican rite, took place at the parish church in Topcliffe, and the wedding reception in Newby Park, Hudson's country residence at that time. The marriage was announced in the social columns of a number of English newspapers, including the reputable *The Times*².

In the summer of 1855, the Sumińskis undertook a long journey through Europe with the aim of visiting Spain. At first they were accompanied by Hudson, who, however, fell ill in San Sebastian and quickly returned to England. While traveling through Andalusia, Michał Hieronim made a number of sketches of Mauritian buildings. The goal of the journey was Grenada, and in particular a visit to the palace of emirs known as Alhambra. The castle of Mauritian kings fascinated the Polish traveler so much that when he expanded his residence in Saxony years later, he copied some of its architectural elements.

On their return from Spain, the Sumińskis divided their time between visits to Berlin, Tuczno, and trips to fashionable spas. Around 1857, Sumiński made a longer trip to Italy and Rome. In 1859, he financed the renovation of the branch church located on his lands in Rzeczyca. The temple still exists today and currently serves as a parish church³.

Due to his health problems, Leszczyć–Sumiński sold his lands in Tuczno and in 1864 purchased a small house in Tharandt located near the ruins of an old castle. Over the next ten years, he expanded the house by building a separate gallery for his collection of art, a tower, and a greenhouse. In time, he managed to create a beautiful residence located on a hill, surrounded by a park with fountains, a pond, an artificial cave, and well-groomed lawns. In summer, the grounds of the palace were ornamented with palm trees and exotic greenhouse plants. Sumiński's estate was unique in Tharandt, and the locals referred to his residence as *Schloss Sumiński* or *Villa Sumiński*.

The Polish aristocrat's seat consisted of eleven residential rooms. There, he gathered an extensive and valuable collection of paintings, china, stylish furniture, and ivory. His collection included 350 canvases. One of them was the painting *Madonna and Child with Joseph* attributed to Rafael (but probably a copy), which he received from Prince Hohenzollern–Hechingen. He also owned paintings by Corregio, Murillo, Rubens, and Eduard August Hildebrandt. Sumiński purchased some of the paintings at low prices (due to their poor conservation) and later restored them on his own accord. He also

¹ See: R. S. Lambert, *The Railway King*, George Allen & Unwin, London 1934; A. J. Peacock, *George Hudson 1800–1871. The Railway King*, Peacock, vol. 1–2, York 1988–1989; B. Bailey, *George Hudson: The Rise and Fall of the Railway King*, Allan Sutton, Stroud 1995; R. Beaumont, *The Railway King. A biography of George Hudson railway pioneer and fraudster*, Review, London [1 ed.] 2002, [2 ed.] 2003; A. J. Arnold, S. McCartney, *George Hudson. The Rise and the Fall of the Railway King*, Hambledon & London, London–New York 2004.

² Marriages, *The Times* 21726, 27 April 1854, p. 1.

³ J. Korytkowski, *Brevis descriptio Historico-Geographica Ecclesiarum Archidioecensis Gnesnensis et Posnanensis ad ordinem decanatum digestarum*, Typis J. B. Lange, Gnesnae 1888, p. 250.

painted himself, mainly portraits and religious scenes, and his compositions were in line with Rafael's style. Sumiński's collection was later sold by his heirs and not much more is certain about it. It is only known that a number of his paintings were purchased from the Vatican collection from Pope Pius IX.

In the winter of 1870, Sumiński was approached with a proposition to become a member of the Order of Malta. As he accepted the honor, he decided to be assigned to the Roman province of the order. He received the official nomination to honorary and devotional knight on 24 February 1871. In July the same year, he received an official permit to wear the Maltese order on the official chamberlain attire¹.

In November 1874, a tragic accident took place in the Berlin flat of Michał Hieronim. His wife Ann Elizabeth suffered a heart attack and died soon after. In the autumn of 1882, Leszczyc–Sumiński married the widow Caroline von Recum, whom he had known for over 30 years. The marriage was celebrated at the catholic Hofkirche in Dresden and was consecrated by Jacobus Buk, a meritorious priest, writer, and scientist from Lusatia. Michał Hieronim spent his last years mainly at the Tharandt residence. He enjoyed respect and sympathy from the town's citizens. He was honored with a membership in the Royal Saxon War Association.

Michał Hieronim died, following a short period of illness, in Tharandt on 26 May 1898. According to the certificate issued by his family doctor, Karl Edmund Biehayn, death was caused by circulatory failure. The funeral ceremony took place in Tharandt on 29 May. The corpse was later transported to Berlin. After a memorial service at the St. Hedwig Cathedral, the coffin was placed in the church's underground tomb. Leszczyc–Sumiński was buried next to his first wife. In May 1931, all the sarcophagi from the cathedral's tomb were removed and transported to the catholic cemetery in Berlin–Reinickendorf, where they were buried in an anonymous grave, a so-called collective station (Sammelstelle).

Psychological portrait

The scope of Count Sumiński's interests is nothing out of ordinary in the context of other Polish high society of that time and their passions. Many landowners were interested in natural sciences, if only to complement their agricultural studies, while gathering art collections was in fact one of the main determiners of social status. Some Polish well-born combined their superficial fascination with arts and the natural world with the approach of a well-educated amateur. What distinguishes Leszczyc–Sumiński, however, is the fact that through his passion he managed to make an important discovery, and his contribution to the development of natural sciences was a creative one.

A good method of presenting the cognitive style of the Polish botanist seems to be an analysis of the mechanisms that initiated his research on ferns and the approach that led him to the final, revealing results. The foundation for his observations was independence of thought. This trait could have been

¹ Wiadomości urzędowe, *Dziennik Poznański* 159, 15 VII 1871.

developed by proper education. The dominant system in gymnasiums of that time might have limited any divergence of thinking, but the imitative character of the educational system was compensated by the autonomy and independence allowed by his closest environment. Financial independence was also an important factor, as it allowed young Michał Hieronim to take basic life provisions for granted. It also seems that the childhood of the Polish naturalist was spent in an atmosphere of numerous attractions and various stimuli provided by his environment. Those are the factors that determine the dynamics of mental processes, provide the material for imagination, and encourage creative and independent thinking. One should not be surprised, therefore, that the breakthrough scientific discovery was made by an artistically talented man, i. e., someone with a well-developed imagination and sense of beauty. These characteristics seem to be particularly crucial elements of a proficient scientist's mind.

The genesis of his interest with nature seems rather straightforward. He was born in the country and spent much of his childhood in a rural environment, where the rhythm of life is dictated by the seasonal changes in nature. The fascination developed while playing on the estate fields and meadows was further enhanced during his studies at the gymnasium in Toruń. There, he had access to a botanical garden and contacts with good teachers of natural history. Thus, as he entered university in Berlin, Sumiński was already focused on a clearly defined scope of interest in the natural world.

Interesting observations can be made on the basis of the *anatomy of discovery* made by Leszczyc–Sumiński. His accidental observation of the *spiral threads* posed a research problem. The ability to notice the problem was due to his scientific approach, which in turn was a result of his naturalist studies. What strengthened Michał Hieronim's zeal was his certainty that the problem had remained unsolved by scientists. The element of the unknown encountered during his earliest observations through the microscope was the main source of motivation allowing him to continue the research. Another chief element was his cognitive inquisitiveness prompting him to find the solution to a problem once it was comprehended. Such curiosity often results in new information being discovered about the environment. Systematic observations were rewarded by strong positive emotions accompanying every new advancement, as he felt that he contributed to explaining facts previously unknown to science. The structure of the dilemma he chose to work upon was typified by the fragmentary character of the initial data and the existence of only one correct solution, which Sumiński could not have known a priori. As he strove to disclose the underlying mechanisms, he displayed great observational ingenuity (e. g., skillful use of the prothallium, use of a strong magnifying glass in addition to the microscope, provision of additional lighting, experiments in an aqueous environment as well as dry preparation, development of an original culture method on clean, white sand, comparison of the reproductive stages in a number of species, etc.). The weakness of his research method lay in his adoption of Schleiden's hypothesis in an attempt to explain the moment he did not manage to observe (the nature of fertilization in ferns). This hypothesis proved to be the weakest element of his argument. This was

due to Sumiński's identification with a certain *intellectual group*; in this case the intellectual influence of the German professor was so strong that the young botanist did not attempt to challenge his concept. It is also notable that Sumiński closely adhered to the nomenclature used by his predecessors (thus the unfortunate name of *spiral threads* in reference to male gametes).

The *anatomy of discovery* presented above indicates that Leszczyc–Sumiński was characterized by a highly developed intelligence, good memory, and perceptiveness. He was able to identify research problems and propose their solution. He displayed a strong drive to achieve the goals he set for himself and the ability to overcome any obstacles, as well as great motivation and diligence. Sumiński's intellect was enriched by additional qualities resulting from his artistic talents and interests. Those elements, in turn, must have been closely tied to such personal traits as excellent depth perception, independence of creation and recreation, intuitive development of artistic skills, and the ability to notice and evaluate pieces of art as well as to study the methods of their creation. Artistic talent is also always accompanied by such characteristics as a strongly creative imagination, emotional sensitivity, and original thinking supported by intuition. The aptitudes (for natural sciences and art) described above were demonstrated by his creative approach. Their realization also depended, along with the emotional traits mentioned above, on self-acceptance, the specifics of his personal values, emotional independence, and a certain social distance.

Among the values accepted by Leszczyc–Sumiński, religion played an important part. He held his faith in such high regard that both his wives converted to Catholicism under his influence. He also created religious paintings, followed his grandfather's example in founding a church in his lands, provided certain amounts of money to charities, was accepted as a member of the Order of Malta, and remained in touch with the papal court.

Conclusion

With his discovery, Sumiński earned his place in the history of the most important scientific achievements of the 19th century. The results of his research, and especially the audacity with which he announced them, outraged and divided the European botanical society of the time. For some, his observations stimulated further research on the reproduction of cryptogamic plants; for others it was a figment of the imagination, almost a scientific blasphemy. The latter, larger group most likely influenced Sumiński's later attitude and resignation from further botanical observations. Although a few years later the research of other botanists confirmed his claims, he was already focused on realizing his life's other passions: he traveled, painted and restored paintings, and expanded his estates. Michał Hieronim Leszczyc–Sumiński was an amateur scientist, the author of only one major scientific work; however, his discovery was crucial enough for him to deserve our remembrance and further studies of his still mysterious life*.

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