Mendel’s journey to Paris and London: context and significance for the origin of genetics.

Peter J. van Dijk
peter.van-dijk@keygene.com
Keygene N.V.,
Agro Business Park 90
6708 PW Wageningen, The Netherlands

T. H. Noel Ellis
Department of Metabolic Biology,
John Innes Centre,
Norwich Research Park
Norwich,
NR4 7UH, United Kingdom
Abstract

From a letter Gregor Mendel wrote to his brother-in-law, and a photograph of a large group of people in Paris, it is known that Mendel visited the International Exhibition in London in August 1862. There has been speculation about the status and composition of this travel group; for example, whether it was an official delegation from the city of Brünn. There has also been speculation on whether Mendel visited Charles Darwin on that occasion. We have now found a partial list of participants of the second 1862 pleasure train (Vergnügungszug) from Vienna to Paris and London, which includes Mendel’s name. The names of 158 participants make a partial reconstruction of the travel group possible. Digital newspapers were researched to get more insight into the status, residence, and profession of the participants. Most belonged to the upper-class of the Austrian Empire, among them several citizens of Brünn. Such luxurious all-inclusive pleasure trains were a new phenomenon in Vienna at the time and received much attention in the newspapers. Gregor Mendel was one of the first to participate in this expensive new trend. The person next to Mendel in the photograph shows a clear resemblance with Johann Nave in the photograph of the founding members of the Natural Science Society of Brünn the same year (see Figs. 1 and 5). The newspaper lists of arrivals in Viennese hotels shows that Johann Nave, was in Vienna when the pleasure train departed. Johann Nave was an internationally acknowledged algae expert with interest in plant reproductive processes. In 1858 Mendel had nominated Nave as a new member of the scientific section of the Agricultural Society. A scientific connection between Mendel and Nave has been conjectured previously; however, evidence was lacking so far. After his early death in 1864, Nave’s scientific library was acquired by the Natural Science Society. It contained books about the latest insights on plant fertilization, and since Mendel’s 1866-paper contains a lengthy footnote about this topic, Mendel and Nave likely discussed this area of Mendel’s research. This may also have been the case during their journey to Paris and London because it was in 1862 that Mendel conducted the final crossing experiments to test his hypothesis about the composition and the random union of pollen and egg cells. (376)
What was known about Mendel’s travel to Paris and London?

Hugo Iltis (1882-1952), Mendel's first biographer, collected information about Mendel's life through interviews with people who had known Mendel. By then, Mendel had already been dead for 20 years so the memories of the interviewees were inevitably distorted and faded. One of those memories was that Mendel had made a journey to England. Iltis (1924) wrote "Mendel now traveled a good deal.......His nephews tell me that he used often to speak of England and English conditions with such familiarity that they believe he must have crossed the Channel. Thus we form a false picture of Mendel if we think of him only as a scientist and a recluse. He did not spend all his days behind convent walls, and was familiar with a wider world. Unfortunately, however, we know little about these journeys" (English translation, Iltis 1966, p 246-247).

Oswald Richter (1878-1955), professor of Botany at the technical university in Brünn (today Brno, Czech Republic), tried to find out more about Mendel's travels abroad. Through his contacts in the monastery in Altbünn, Richter acquired the large group photograph at the end of the 1920s (Richter 1931, 1943). There are 174 travelers on the photo (Fig. 1), including Gregor Mendel, in the center, towards the back. The caption reads: "Travel to Paris and London 6th August 1862" (Richter 1943).

Fig 1. The photograph of the pleasure train group in front of the Grand Hotel in Paris, taken by Pierre Petit on August 8th, 1862, at 10.20 AM (see clock). One-hundred and seventy-four persons are counted. An enlargement of the center part with Gregor Mendel is shown in Figure 5.

Richter searched the 1862 volume of local newspaper *Neuigkeiten* for more information about the group trip but found nothing. However, in the "*Passprotokollbuch*" (passport-book), Richter found that on July 8th, 1862, Mendel received a 2-months valid passport to visit the "German Confederation, France and England." Shortly after that, a letter from Mendel to his brother-in-law Leopold Schindler dated July 14th, 1862, was found in which he wrote about his intended trip to Paris and England and it became clear that the destination was the International Exhibition of 1862, also known as the Great London Exposition (Richter 1943). "Thursday the 24th of this month [July] I will make a somewhat bigger journey. The way leads this time over Vienna, Salzburg, Munich, Stuttgart, Karlsruhe, Strasbourg, and Paris to London to the great industrial exhibition. In Paris, I will stay for a week, and as long in London. By the middle of August I hope to be in Brünn again. The journey on the railway from Vienna to Paris lasts uninterrupted from the 24th 6 a.m. to the 26th 9 a.m., which means 51½ hours. From Paris I then
use the railway again and over the sea a steamer. - I hope to return happily and to be able to tell you a lot at our next meeting."

Richter (1943) wondered in whose company Mendel traveled because, according to the passport-book, he had no companions from Brünn. His attempts to find something out about the other traveling companions in the group photo, however, remained fruitless. Robin Marantz Henig (2000) writes in her (partly fictional) Mendel biography that Mendel was part of a delegation of teachers from the Oberrealschule led by director Joseph Auspitz. Richter (1943) had discovered that the Oberrealschule had made 29 wall plates of crystallographic structures for the London exhibition, although he could not prove Mendel's involvement in this. Henig's suggestion was later presented as a fact by others (e.g., Williams (2003) and Galton (2017)). Vítězslav Orel (1926-2015), the author of the most complete and authoritative Mendel biography to date, described the group as “A large party of enthusiasts traveling from Brno to see the exhibition... (Orel 1996, p197)".

Online search functions of digitalized historical Austrian, Czech, and German newspapers (ANNO, MKZ, DIFMOE, and DigiPress) made it possible to retrieve many details about Mendel's journey. It turned out that Mendel participated in an all-inclusive group tour by train to Paris and London. Such pleasure trains ("Vergnügungszüge") were new in Vienna in the summer of 1862 and received much attention in the newspapers. A published partial list of the participants of the second pleasure train contains Mendel's name. We can partially reconstruct the travel group from this list. According to us, the person next to Mendel in the group picture shows a clear resemblance to Johann Nave, a fellow member of the Natural Science Society (NSS; Naturforschenden Vereines Brünn) seen in another picture and we provide additional evidence that Mendel and Nave traveled together. Their shared scientific interest in reproductive processes in plants suggests that Nave had a significant influence on Mendel's thinking at a critical stage in his experimental work. We discuss Johann Nave's scientific views making use of some new sources of information.

**New details of the journey**

Gregor Mendel's name is on a sign-up list for a gift to the Stuttgart Chamber of Commerce made by the participants of the second pleasure train to Paris and London (see Fig. 2, Table 1). The special pleasure train to Paris and London was organized by the Viennese entrepreneurs Neumeyer and Mihailovič and costed 250 Austrian guilders (Fig. 3). The unique attraction in London was the large Industrial Exhibition,
in which many countries showed their abilities and achievements to the general public. The exhibition was also known as the third International Exhibition, after London (1851) and Paris (1855).

The first pleasure train to Paris and London left with 200 participants on June 5th from the Westbahnhof and returned to Vienna two weeks later on June 19th. "A locomotive decorated with flowers and flags led the curious Pilgrims first to the Mecca of Pleasure - to the French capital", The Wiener Zeitung (7-06-1862) wrote. The great success of this train made Neumeyer and Mihailovič decide to organize two more pleasure trains to Paris and London, with scheduled departure dates July 21st and 30th (Fremden-Blatt 16-07-1862). Mendel signed up for the second and wrote to his brother-in-law about his travel plans on July 14th. However, due to unforeseen incidents, Neumeyer and Mihailovič were forced to merge the second and third trains into one, which would leave on the July 30th, so six days later than Mendel had written (Fremden-Blatt 20-07-1862). The advertisement (Fig. 3) shows the program of Mendel's train. It was the same as that of the first train, except that the stay in Paris was extended with two more days and a relaxing day in Stuttgart was inserted. Six days were set aside for London, two of which were reserved for a visit to the International Exhibition. The time schedule is shown in Table 2.

Fig. 2. The upper part of the submitted article with the sign-up list, published in Die Presse of August 29th, 1862. Mendel's name is printed at the right end of the third line from the bottom. The donation for the gift to the Stuttgart Chamber of Commerce is indicated in fl. (Austrian guilders). The English translation is given in Appendix I. Table 1 lists the subscribers and their donations.

Fig. 3. The advertisement for the then second and third pleasure trains to Paris and London (Tagespost Graz 04-07-1862). For the English translation, see Appendix II.

Table 1. The extended list of participants, published in Die Presse and Der Zwischen-Act. The fourth column shows the donation in Austro-Hungarian gulden. The fifth column (Ha) indicates hotel arrival before the departure of the pleasure train. The sixth column (Hb) indicates hotel arrival after the return of the pleasure train in Vienna. Mendel is number 43.

Table 2. The time schedule of Mendel's journey. "Original program" refers to the program that Mendel described in the letter to his brother-in-law. The days that the "arrivals" section appeared in the Fremden-Blatt are marked with an "x". The row below indicates the number of people who are on the sign-up list as well as in the arrivals section. The bottom row indicates on which days Johann Nave (presumably) and Gustav Niessl are listed in the arrivals section.
The experiences of the travelers of the first and second pleasure trains were regularly reported in the newspapers. Mendel’s train departed from Vienna on July 30th at 6 a.m. The *Fremden-Blatt* (31-07-1862) described the departure as follows: “Neumeyer’s pleasure train departed yesterday at 6 o’clock from here to Paris and London. The special train consisted of twenty wagons in first and second class and had assembled 340 participants in the local Elisabeth station, whose number will still increase at the intermediate stations. As regards the organisation, everything was initiated with exemplary order, and the travelers left their residences in the brightest mood. There were also twenty ladies in the group. For the provision of care, a doctor accompanies the train with a travel pharmacy provided at the expense of the company. More than a thousand people, friends, and acquaintances of the travelers were gathered in the stations despite the early morning hour, and this time it was exceptionally permitted to board the platform to the wagon hall. The railway directorate had sent a senior official to oversee and supervise the train’s traffic.”

The travel group arrived at Paris on August 1st, where it was divided between the Grand Hotel du Louvre (400 rooms) and the Grand Hotel de Paris, which was opened only two months earlier, on the Boulevard du Capucines (700 rooms). The group photo with Mendel was taken in front of the Grand Hotel de Paris, probably of the travelers who stayed at this hotel. According to the advertisement (see Fig. 3), the program in Paris consisted of the following parts: visit to the opera, pleasure trains to St Cloud (The chateau had been the residence of several French rulers) and Versailles, Bois de Boulogne, the tomb of Napoleon, the Tuileries Palace with the art collections, etc. Omnibus transport and use of porters were included.

Towards the end of the year, the *Wiener Zeitung* published several articles with observations and impressions from Mendel’s journey, written by BB, most probably the journalist Bruno Bucher (1826-1899; “Bucher”, without initials, is on the sign-in list). Although BB wrote mainly about Paris and London in general, at places he described the company (“the new Argonauts”) and the journey: “Since it is not difficult to find your way around Paris, groups and individuals soon set off to stay longer than the schedule allowed, or to undertake independent discovery tours. The opportunity was given to see everything, and most of them did not leave it unused.” (*Wiener Zeitung* 08-01-1863)

Neumeyer and Mihailović arranged the famous Parisian photographer Pierre Petit to take the large group photo as a souvenir of the journey, something unprecedented and characteristic of their entire
organization. On September 20th, 1862, a month after the pleasure train had returned to Vienna, the company L.T. Neumann from Vienna placed an advertisement in the Oesterreichische Buchhändler Correspondenz about the group photo: “The participants of the second pleasure train to Paris and London, Grand Hotel, August 6th, 1862; Portrait group photographed after nature by Pierre Petit. Large oblong folio [33x21 cm], fl. 6; cash payment: fl.5. Upon commission.” Thus the photograph was not included and had to be ordered and paid for separately.

On the evening of August 6th, the same day that the photograph was taken, the group departed from Paris by train to arrive at Boulogne-sur-Mer in the morning. The crossing of the Channel was very stormy, and most travelers got seasick. BB writes about the stay in London: “The Viennese travel group had its headquarters in the London Pavilion, Music Hall and Dining saloons, Tichborne Street, between Regents Street and Haymarket, where breakfast and dinner were served for the whole group. Additional sleeping arrangements were in furnished rooms in the surrounding area. This location was chosen perfectly, right at the heart of metropolitan traffic, on the mainline from the city to the exhibition building.”

In London the program included (Fig. 3): a tour of the Arsenal Museum, the Thames tunnel (first and then only tunnel underwater), the Docks, an Omnibus tour with free entrance for the famous Cremorne Gardens, a pleasure train with free admission to Crystal Palace, a day for the viewing of the Bank of England, Stock market, Guildhall, St Paul’s Cathedral, Monument, Newgate, Hyde Park, Houses of Parliament, Westminster Abbey, British Museum and the Zoological gardens. The trip included two days to visit the International Exhibition. A Thames cruise to Greenwich (Royal Observatory) and the docks were also included.

The Crystal Palace of the first world exhibition from 1851 had been moved to Sydenham and harbored a series of courts that provided a narrative of the history of fine art. A new building had been erected for the major industry exhibition adjacent to the gardens of the Royal Horticultural Society in South Kensington. The exhibition opened on May 1st and closed its doors on November 1st by which time 6.1 million visitors had been counted. A total of 28,000 entries from 36 countries were on display. The London Industry exhibition was a recurring topic in the Austrian newspapers. The Mährischer Correspondent (17-08-1862), for example, reported that on August 12th, at 5 pm, 67,400 visitors had
been counted. At 3 o’clock at least 60,000 visitors were present at the same time, which led to the
hustle and bustle.

The return journey began on Tuesday evening, August 12th, with, this time, a quiet crossing of the
Channel. After an afternoon in Paris the next day, the train left again in the evening to arrive in Stuttgart
on August 14th, at 10 p.m., with a rest day in prospect. In those days, the so-called Zollvereinsfrage was
topical about the abolition of tolls at the borders between the many German states. The southern
German states of Bavaria and Würtemberg spoke out for a customs union with Austria, much against
the wishes of Prussia (Gemeinde-Zeitung 18-08-1862)\textsuperscript{vii}. The Stuttgart Chamber of Commerce had
organized an extensive entertainment program for Austrian travelers, and there was a close fraternity
between the south Germans and the Austrians\textsuperscript{vii}. For political exploitation, the Stuttgart day was
extensively covered in the state-censored Austrian and Southern German newspapers’.

On the train to Salzburg, it was decided to raise money for a gift to the Chamber of Commerce in
Stuttgart as a lasting reminder of this day. For this purpose, a sign-up list was circulated. The list of
donations was published in Die Presse of August 29th, 1862, and contains 142 names including Mendel’s
(Fig. 2, Table 1). In a second publication, a week later, eight names were added, bringing the total to
150. The fact that the lists together comprise less than half the number of people who participated may
have different explanations. The hotel registrations (see below) show that some participants traveled
with their families. Furthermore it may have been that, given the explicit German nature of the
reception, minorities (Czechs, Hungarians, and Croats) were less enthusiastic about donating.

A total of 210 Austrian guilders was collected, with which a silver cup, more than 30 cm high, in gothic
style, was purchased and was presented by a delegate in Stuttgart at the beginning of October
(inscription: “Die Mitglieder des zweitem Wien-Londoner Vergnügungszuges zur Erinnerung an den 15
August 1862” (The members of the second Vienna-London pleasure train in memory of August 15th,
1862); Swäbische Merkur 08-10-1862). Mendel’s pleasure train returned at the Westbahnhof in Vienna on
the evening of Saturday, August 16th (Die Presse, 16-08-1862).

Later in the year, Neumeyer and Mihailovič also organized pleasure trains to the Munich Oktoberfest,
and for the next year, pleasure trains to Paris, the Rhine, Switzerland, and Hamburg were in planning
(Die Presse 27-08-1862). Their journeys were distinguished from those of others by their luxury and
care. They were the first to organize international multi-day group trips. Such luxury pleasure trips were a new phenomenon in Vienna and attracted much attention in the Austrian press in 1862. The number of times that we find the word “Vergnügungzug” in the Austrian newspapers multiplied by a factor 18 in 1862 compared to the year before, as can be seen in Fig. 4.

Fig. 4. The number of times per year the word “Vergnügungzug” (pleasure train) occurs in the ANNO digital newspapers between 1849 and 1870. There is a spectacular increase in 1862, the year of Mendel’s journey. The drop in numbers in 1866 can be explained by the Austro-Prussian War.

The columnist Friquet (1862) mocked the Vergnügungzug “mania” in his Chronique de Vienne. According to him, referring to Mendel’s train, such group photos were a unique opportunity to be saved for posterity without having done anything significantvi. By the end of the year, the pleasure train to London was the subject of several theatre playsvii. The new phenomenon inspired Johan Strauss to write the Vergnügungzug polka, commissioned by the Association of Industrial Societies, which was first performed in January 1864.

Mendel’s likely interests

We can, of course, only guess what particularly appealed to Mendel on the trip to Paris and London. The world cities, the famous buildings, the exhibition of industrial and technical progress, the great works of art? That Mendel was interested in art and culture is evident from memberships of various cultural associations, such as the Austrian Art Association (Oesterreichische Kunst-Vereins), the Styrian Art Association (Steiermärkischer Kunstverein), the Brünner Music Association (Brünner Musikverein) and the Schiller Association (Schiller Verein) (Sajner 1971). Mendel must also have been interested in trade and commerce since he was a member of the Moravian Chamber of Commerce (Märischen Gewerbeverein) in 1865 (Auspitz 1865). In 1873 he visited the Vienna World Exhibition with two of his nephews, an indication of his interest in technical and industrial progress. These are clearly secular interests, and it is worth reiterating Hening’s comment on Mendel’s appearance in the photograph, that “He does not give himself away as a priest”, he is dressed informally in secular attire like the others.

We can imagine that three departments of the Industry Exhibition attracted Mendel’s particular interest. The first was Class 3: Substances used for food. Because of his experiments in peas and beans, he probably was interested in vegetable varieties. “Pulses, the pea and bean family, occupied a place in
almost every European collection. Sweden, Germany, and Russia sent samples of peas and beans of the common kinds” (Preston Shaffner and Owen 1862). Well-known seed trading companies such as Sutton and Sons from Reading and Vilmorin Andrieux of Paris, as well as the German dealer of ornamental and vegetable seeds Martin Grasshof from Quedlinburg, were present.

The second department that Mendel will have been interested in was Class 9: Agricultural and Horticultural machines and implements. The St. Thomas monastery had estates that needed cultivation. In the past, the monastery had been involved in the introduction of new types of plows in Moravia. The most eye-catching machine was the American self-acting reaper from McCormick, which was described as "ingenious, exceedingly practical and economical of labor" (Preston Schaffner and Owen, p201).

Mendel’s attention could have gone to, for example, plows, glasshouses, steam plows, steam cultivators, chaff cutters, conservatory boilers, lawn mowing machines, rotary harrow, an observatory beehive, and apiary, etc., etc. (Anonymous 1862a).

Educational Works and Appliances were exhibited in Class 29. The school articles from the Brünner Oberrealschule in which Mendel taught got an honorable mention for the products of the pupils. In addition to the aforementioned crystallographic wall plates, the school also provided calligraphic exercises, geometric drawings, and free-hand drawings (Neuigkeiten 25-1-1862). The textbook "Fundamentals of chemistry" (Anfangsgründe der Chemie), written by Mendel’s colleague Berr, both in German and in Italian translation, was also selected for the exhibition of Austrian education (Neuigkeiten 28-11-1861).

The composition of the travel group

The names on the sign-up list provide insights into Mendel’s company. The list is non-alphabetical, with more than half of the surnames with initials or first names. The list seems to reflect spontaneous registration during the return journey. Due to poor printing quality, some names are difficult to read or completely unreadable. By online newspaper and address book searches, it was checked whether the deciphered surnames existed. It was regularly found that even easily readable names did not appear in ANNO, DIFMOE, or the MZK digital newspapers. This may have to do with transcription and copying errors or differences in the spelling of surnames in different languages.
From other sources, some participants that are not on the list can be added. Both speakers in Stuttgart, Dr. Theophil Pisling and Dr. G. Doleschall, are not on the list. The newspaper *Der Zwischen-Act* (30-07-1862) mentions six names of participants: Fürsten Joseph Wrede, Grafin Stadium, Baronin Csorich, Dr. Gernard, Baronin Hayek and Ritter von Lecci. Together this adds eight names, bringing the total number of names to 158 (Table 2; we refer to this as the extended travelers' list).

It is interesting to compare the extended travelers' list with the lists of arrivals ("Angekommenen") in the Viennese newspapers. Hotels, ordered by the police, had to register arriving guests and these were published in the *Fremden-Blatt* and the *Wiener Zeitung* (except on Mondays). Some participants from outside of Vienna stayed in hotels before departure or after their return to Vienna and may be found in the arrivals sections. The residence and profession of the guests are often reported.

We found 22 persons of the extended list arriving at hotels before the departure and 29 persons arriving after the return in Vienna (Table 3). Because the return date of all persons is known (August 16th), there appears to be a delay of three to five days in publishing. Strikingly absent from the arrival lists is Gregor Mendel. On previous visits to Vienna, for example, to take his exams, Mendel’s name can be found in the listings (a total of 13 times between 1850 and 1876; Vollmann and Matalova 2016). He may have stayed with acquaintances or in a hotel that was not included in the arrivals section before leaving, but on his return, he may also have traveled directly to Brünn by train (18.30 departure; Vienna-Brünn 135 km).

We were able to identify names and residence of 81 persons of the extended travelers' list with great certainty (Table 4). For others, there was ambiguity because of the lack of initials, or too common surnames, non-verifiable or unreadable surnames. The distribution of the positively identified travelers among present-day countries is shown in Table 5. Travelers came from nine different modern countries. About half of the travelers were from Austria and from these more than half from Vienna (26). As BB wrote: “This time Vienna did not dominate to the same degree as on the first voyage; for this, apart from Transylvania, each crown land had its quota. Types, language, costumes mark the most diverse nationalities and regions”.

Out of the 81 positively identified travelers, the profession or title of 75 could be deduced. Besides, from 10 persons of the extended list, the residence is not known, but their title was given. Thus of 85
travelers, the profession or title is known (Table 4); of these, about one quarter belong to the nobility (12 high nobles, Baron, Count or Fürst, and nine low nobles, Von and Ritter). Together with five landowners, they represent the ‘old money of the upper-class’. The ‘new money’ is represented by merchants (16) and factory owners (12). Nine doctors, most in medicine, were present, as well as two pharmacists and two mayors. The list tells us that there must have been at least three priests and two Oberrealschule teachers, Mendel being both. Table 6 shows that the middle class was also well represented. The list agrees with what the Vereinigter Laibacher Zeitung (02-08-1862) wrote about the 12 travelers from Laibach (now Ljubljana): three large landowners, five businessmen, and a wallpaper decorator, a calligrapher, a photographer and an engineer. Some professions are mentioned in several individual newspaper articles. BB describes a tailor and a country parson (Wiener Zeitung 11-12-1862). There was also one farmer, who came from the Salzburg area, among the travelers (Salzburger Zeitung 18-08-1862). BB characterized the group as follows: “Among the petty-bourgeois of all classes are bearers of old and proud names, some of whom are even at home in the genealogical books, scholars in abundance ......, officials and military of higher and lower grades, great and small landowners, priests of German, Slavic, and Magyar tongues, and the official travel doctor finds so many volunteer colleagues that one can already look forward to the perils to come with some reassurance ”(Wiener Zeitung 28-11-1862).

The Mährischer Correspondent wrote that several residents of Brünn traveled on the second pleasure train without mentioning names: “In the next few days a second pleasure train arranged by Messrs. Neumaier and Mihailowic will leave Vienna for Paris and London; we learn that several Brünner citizens will take part in this trip.”(29-07-1862). Besides Mendel, there are six more Brünner residents on the extended list. Eduard Pursch (an owner of a wool goods shop), Franz Illek (a manufacturer of wool goods), Gustav Umgelter (an owner of a wool dyeing works) and Ernst Frömmel (a coppersmith) are below each other on the list of arrivals in the Fremden-Blatt at the hotel Weisse Ross on July 31th. They are also directly below each other in the sign-up list - an indication that the published list was the original unordered list - and thus form a group. Dr. Carl Gernath, an army doctor from Brünn, was also checked in at the Fremden-Blatt on July 30th, namely at hotel Wandl. Count Daun traveled with his forest manager Heinrich Albert. They cannot be found in the arrivals section before the pleasure trip, but they can be found afterward, namely, on August 20th in the Weisses Ross.

Who traveled with Mendel?
To find out whether persons on the extended list were known to Mendel the extended list was compared with the list of teachers at the Oberrealschule (in 1857: 23 names, and 1864: 24 names; Auspitz 1858, 1865), with the list of members of the Natural Science Society from 1862 (168 names; Anonymous 1863) and with the list of Augustinian friars (13 names; Klein and Klein 2013) from those days, but besides Mendel, no matches were found. When we compare the list with that of the Viennese Zoological-Botanical Society (Zoological-Botanical Vereins; in 1862: 807 names; Anonymous 1862b) we find two matches: Joseph Gobanz and Karl Waginger. Gobanz (1831-1899) was a natural history and geography teacher at the Oberrealschule in Graz and a friend of Professor Franz Unger, Mendel's teacher at the University of Vienna. Gobanz traveled with colleague Oberrealschule geography teacher from Graz, Franz Ilwof (1831-1916). It is not known if Mendel knew these men personally. Because the extended list included fewer than half of the participants, it is possible that Mendel's friends were among the travelers, but not on the list.

Is Johann Nave in the group photograph?

According to Vítězslav Orel (1996), it would have been interesting to find “out whether or not Mendel’s friend J. Nave also took part in the trip to London” (p 197). Johann Nave lived in Brünn and was interested in plant anatomy and physiology, especially in studies of algae (Kalmus 1865) including their reproductive processes. Orel did not think that it was likely that either Mendel and/or Nave had visited Darwin, and we agree with Orel that the trip would have provided the opportunity for Mendel and Nave to discuss Mendel's work in relation to Nave's interests and their relevance to Darwin’s theory. However, Orel could not confirm Nave's presence from the group photograph.

Iltis (1924) contains a photograph of the founders of the NSS from 1862, the same year as the Paris group photo. This is the only photo of Johann Nave that is known to us. The person to the right of Mendel in the group photograph shows a resemblance to Johann Nave from the founding photograph. In the founding photograph, Johann Nave has a trimmed beard and greased hair, making both ears visible. This is not the case on the Paris photo where the person has longer, non-greased hair. However, the eyebrows, nose, and mouth are very similar. This becomes more clear when we overlay the photos (Fig. 7). Other people around Mendel in the group photograph show no similarities with Johann Nave. If Johann Nave had accompanied Gregor Mendel, it would be logical that they would stand next to each other.
Additional evidence that Nave accompanied Mendel

We checked the hotel arrival lists to find out whether there were any indications that Johann Nave was in Vienna on the day of the departure of the train. According to the *Fremden-Blatt* “S. Nabe, Brünn” arrived at the hotel the Goldene Ente on July 31st. On July 1st, November 12th and December 4th, “J. Nabe” from Brünn also registered in this hotel. It is therefore likely that the “S. Nabe” of July 31st is a writing error and that this concerns “J. Nabe”, the letters S and J can be similar in handwriting from that time, furthermore the letters b and v are closely related phonetically. Writing errors are widespread in the lists of persons that have arrived; for example, Mr. Ungelter is mentioned as Umgelder. Also, the spelling of the names of same people in the *Fremden-Blatt* and the *Wiener Zeitung* is often different. In contrast to “Nave”, the surname "Nabe" does not appear in the Brün and Vienna newspapers of that time, nor the Brünner address books of 1853 (Herlth 1853), 1856 (Herlth 1856) and 1862 (Zeckel 1862), it is probable that the name "Nabe" does not exist and that this also concerns a false transcription and that in reality, this concerns J. (Johann) Nave.

Although the facial agreement or the hotel registration alone may not conclusively prove Nave’s participation in the trip, the combination does, in our opinion. Moreover, Johann Nave’s library (see below) included a new English-German dictionary (Thieme M. F. W. 1862. *Neues vollständiges Wörterbuch der englischen Sprache*), which Nave may have bought for the visit to London.

Fig. 5. An enlarged central part of the group picture in front of the Grand Hotel. The circles indicate Gregor Mendel (left) and (presumably) Johann Nave (right). Note Mendel’s secular clothing and Nave’s cigar.

Figure 6. A photograph of the founders of the Natural Science Society at Brünn in 1862. Number 4, encircled, is Johann Nave. Number 10 is Gustav Niessl von Mayendorf.

Another close NSS friend of Mendel, Gustav Niessl von Mayendorf (1839-1919), was also in Vienna early August, as evidenced by the section "arrived" in the *Fremden-Blatt* of 3-08-1862: “G. v. Mayendorf, Brünn” at the hotel *Goldenes Kreuz*. Although the registration is four days after the departure of the train, one of the identified travelers is registered in the same hotel, on the same day	extsuperscript{vi}. It is therefore likely that Gustav Niessl von Mayendorf was present at the departure of the train. Niessl von Mayendorf is also on the founding photo of the NSS, but unlike Johann Nave, we were unable to discover him among the people around Mendel on the Paris photo as would be expected for friends that travel together. It is conceivable that Niessl did not participate but only said farewell to his friends at the
departure, or he may have lodged in the other hotel in Paris (*Grand Hotel du Louvre*) that was used by
the group.

Fig. 7. The NSS picture of Johann Nave on top of the image of the person to the right of Mendel, with increasing
transparency from left to right. The portrait from the group photograph was slightly rotated to the left. To remove
the print raster, the half-tone images were first blurred in Photoshop with gaussian blur. The eyebrow, the nose,
the mouth, and the hairline are very similar.

**Could Mendel have met Darwin?**

William Bateson (1902) ended his “Mendel’s Principles of Heredity” with: “If Mendel's work had come
into the hands of Darwin, it is not too much to say that the history of the development of evolutionary
philosophy would have been very different from that which we have witnessed”. The Achilles heel of
Darwin's evolution theory was the lack of a good heredity theory that prevented adaptive variation from
being diluted by blending inheritance. Darwin would have been much helped by the knowledge of
Mendel’s discrete inheritance theory. Therefore, Loren Eiseley (1961) poetically called Mendel "the
priest who held the key to evolution." Richter (1931) investigated whether it was possible that during his
stay in London Mendel had visited Charles Darwin, who lived in Down, not far from London. He wrote to
Darwin’s son, Leonard, who, 70 years later, remembered that the Darwin’s received no visitors at the
time because he had scarlet fever (De Beer, 1965). Orel (1996) argued that such a visit was unlikely
because Mendel had not yet published his results, was a very humble person and did not speak English.
Nevertheless, even if a visit did not take place, it has fueled counterfactual thinking, like Bateson’s
above: “what would have happened if?” (e.g., Lorenzano 2011).

In the second week of August 1862, Darwin and Mendel came geographically closer than ever. Darwin
lived in Down, and Mendel and Nave probably visited Crystal Palace in Sydenham as part of the pleasure
train program, 13 km as the crow flies. We now know that Mendel was in London from the 7th to the
12th of August 1862, six days later than stated in his letter to his brother-in-law. Darwin wrote letters
from Down between August 4th and 12th, proving that Darwin was in Down during Mendel's stay in
London (Darwin Correspondence project, [https://www.darwinproject.ac.uk/](https://www.darwinproject.ac.uk/)). However, there was
probably also little reason for Mendel and Nave to visit Darwin. At the time they were interested in
reproduction and inheritance, and not in natural selection and adaptation (Mendel would only elaborate
on this later in his *Hieracium* work). Mendel’s pea studies were not completed, and he had not yet bought a copy of the German translation of the *Origin* (Mendel possessed an 1863 edition).

The timing and implications of this journey for Mendel’s work on *Pisum*

Mendel’s cross-breeding experiments with peas, which began in 1856, were in the final phase of the backcrosses to determine the composition of the pollen and egg cells. Based on the outcome of previous crossings, Mendel had developed a hypothesis that, for a given character, the different kinds of egg cells and pollen grains of a hybrid were produced in equal numbers and fused at random. The backcross experiments were performed to test this hypothesis. The crossings for 1862 had been made, and the seeds were ripening. The size of these experiments was much smaller than those in the previous years (Orel 1971) and would allow him to leave Brünn for a couple of weeks. The experiments would run for another year to be presented in early 1865 in two lectures at the Natural Science Society in Brünn. In August 1862, Mendel’s teaching and librarian duties at the *Oberrealschule* that year were over, and the new semester would not start until October.

The friendship between Mendel and Nave and their shared scientific interests

Gregor Mendel and Johann Nave, who was nine years younger, probably knew each other as students at the University of Vienna, where they simultaneously attended botany lectures from Professors Unger and Fenzl (1851-1853) (Iltis 1924). Nave studied law, but was a keen amateur botanist and spent all his spare time in the botanical cabinet and gardens of the University (Kalmus 1865). Both men returned to Brünn in 1854. Mendel became a supplemental teacher at the *Oberrealschule* and started cultivating pea varieties for his later crossing experiments while Nave became a civil servant at the Moravian financial department and devoted his leisure to botanical studies. Mendel joined the Scientific Section of the Agricultural Society (SSAS, *naturwissenschaftlichen Section der mährische schlesischen Gesellschaft für Ackerbau, Natur- und Landeskunde*) of Brünn in January 1855. Whereas in Vienna, Nave was interested in plant anatomy and physiology, in Brünn, he became more interested in microscopic studies of algae (Kalmus 1865). In April 1858, Johann Nave was elected as a member of the SSAS, upon nomination by Gregor Mendel (Anonymous 1859). Mendel did not nominate other candidates, which emphasizes their special friendship. Out of dissatisfaction with the functioning of the SSAS, several young science enthusiasts, among them Johann Nave and Gustav Niessl, founded the Natural Science
Society (NSS) in late 1861. Nave became the treasurer and librarian of the new society. Mendel became a member at the foundation of the NSS. In 1864 Nave became seriously ill and had to give up his activities for the NSS. Confined to bed, he completed his highly successful handbook “A Manual to the Collection Preparation and Study of plants, especially concerning Cryptogams” (“Anleitung zum Einsammeln, Präpariren und Untersuchen der Pflanzen mit besonderer Rücksicht auf Kryptogamen”), which was published in German in 1864 (Nave 1864) and translated into English in 1867 (with four successive editions). He died at the age of 33, in November 1864 from tuberculosis. According to Iltis (1924), it was his friend Mendel who gave him the last sacraments.

Only a month after his election to the SSAS, Nave gave a lecture in the May 1858 meeting “On the development and reproduction of algae” (Nave 1859). In this lecture, he summarized the most recent findings of sexual reproduction in algae, mainly referring to the latest “brilliant” discoveries made by Nathanael Pringsheim (1823-1894). In the introduction, Nave stated that research on these microscopic organisms was of significant importance for the entire field of plant physiology. “The research on algae has achieved important results in a short time. From it, knowledge was gained about those basic developmental laws of more complex plants. Research on algae allowed researchers to observe events clearly that would probably never have been discovered due to the complexity of higher organisms and the inevitable necessity of anatomical preparation or disruption of context.” Nave described the process of fertilization as observed by Pringsheim in the freshwater alga *Vaucheria sessilis*: “……The rod-shaped bodies penetrate, swarm around the green content, gradually trying to break through the mucus wall that surrounds it until it is likely that one succeeds to penetrate the green content, on which a larger colorless body becomes visible. Now the spore is fertilized and is encapsulated by a cellulosic membrane. The other swarming rod-shaped bodies gradually die outside the newly formed spore cell” (original italics). Vaucheria is a mat-forming genus of yellow-green algae, well known to Nave and Mendel because it was studied by Unger, who discovered the movement of resting spores by cilia. Thus according to Nave, a single spermatozoid fertilized the spore and an analogous situation could be envisioned in higher organisms. The analogy meant that an egg cell would be fertilized by a single pollen grain, which was essential for Mendel’s theory of inheritance. No doubt Mendel was aware of Nave’s ideas when he nominated Nave a month earlier and, given their close friendship and shared interests, Mendel and Nave would have discussed this. Johann Nave was interested in broad biological questions, as is illustrated by his lecture at the NNS in May 1862 about “Limits and points of contact between the animal and plant kingdoms” (Grenzen und Berührungspunkte des Thierreiches und der Pflanzenwelt;
Brünner Zeitung 21-05-1862)(Nave 1863) concerning the fundamental differences between animals and
plants, an interest that he shared with his professor Franz Unger (Unger 1852).

After Johann Nave’s death in November 1864, his scientific books were bought by Franz Czermak and
donated to the NSS (Brünner Zeitung 24-01-1865). These books are listed in the meeting report of
January 1865 (Anonymous 1866). Knowing that they belonged to Johann Nave, gives a unique insight
into the scientific questions which interested Johann Nave. Amongst the many books on cryptogams,
there were works on fertilization in lower and higher plants, including Pringheim’s groundbreaking 1855
paper about the act of fertilization (Über die Befruchtung und Keimung der Algen, etc.).

There were two more papers by Pringsheim in Nave’s library and two publications by Ludwig Radlkofer.
In his dissertation in 1856, Radlkofer (1829-1927) had provided undeniable proof that in flowering
plants, the embryo originated from the fertilized egg and not, as his teacher Matthias Schleiden initially
claimed, solely from the tip of the pollen tube. Radlkofer’s work convinced Schleiden, and this ended a
fierce controversy that had lasted for more than a decade. The first of the two Radlkofer books that
Nave possessed was “The fertilization process in the plant kingdom and its relationship to the animal
kingdom” (Der Befruchtungsprocess im Pflanzenreiche und sein Verhältniss zum Thierreiche, 1857). From
the specific phrases that Nave used in his May 1858 lecture, it is clear that he had read this book by that
time. On p81 Radlkofer concludes: “so much is certain that the content of the pollen tube is the analog
of the spermatozoids, the vesicle is the analog of the egg, that the fertilization process of the
phanerogams corresponds entirely to that of the cryptogams and that of the animals”. This reflects the
introductory remarks that Johann Nave made in his lecture.

Eight years later, in a lengthy footnote in his 1866 article, Mendel wrote that his crossing results could
only be explained by the union of a single egg cell and a single pollen cell. “According to the opinion of
famous physiologists, in phanerogams, one germ and one pollen cell respectively unite to form a single
cell*) that is able by absorption of matter and formation of new cells to develop itself further into an
autonomous organism”. Mendel added a footnote to this passage: “*) In Pisum it is surely beyond doubt
that a complete union of the elements of both fertilization cells has to take place for the formation of
the new embryo. How else would one want to explain that among the progeny of the hybrids, both
parental forms reemerge in the same quantity and with all their peculiarities? If the influence of the
germ sack on the pollen cell was only external, if the role of a wet nurse was only assigned to the same,
then the success of each artificial fertilization could be nothing else than that the developed hybrid resembled the pollen plant exclusively, or at least came to stand close to it” (Mendel 1866, 2016, p41; BSHS translation). This is the only footnote in the article, which indicates its importance for Mendel. This footnote should not be interpreted as a contribution to the dispute about the role of the pollen tube in the formation of the embryo of the flowering plants since this had already ended a decade earlier. Mendel stresses that his theory is consistent with the cytological understanding of the reproduction process to date. The act of fertilization itself however, remained a mystery. It was generally assumed that a fertilization fluid would diffuse from the tip of the pollen tube into the egg cell (Radlkofer 1857). The fusion of pollen and egg cell nuclei was discovered more than two decades later by Eduard Strasburger (1884).

Equally interesting is the second book by Radlkofer that Johann Nave possessed: “On the relationship between parthenogenesis and other types of reproduction” (Ueber das Verhältniss der Parthenogenesis zu den anderen Fortpflanzungsarten, 1858). Radlkofer summarized theory of Johann Dzierzon (1811 – 1906) about hybridization between yellow (Italian) and dark (German) honey bees, which mentions not only parthenogenetic drones but also equal (1:1) ratios and recessiveness of traits:

“Queen bees of the yellow Italian variety always produce yellow drones, even if fertilized by a drone of the black German variety. In contrast, the influence of the father is clearly recognizable in the worker bees, less so in the individual bees, but rather in the offspring as a whole; these do not correspond to a distinct intermediate form, but half of the bees resemble the father, while the other half resembles the mother. When the bees resembling the mother reproduce parthenogenetically, they produce partly Italian and partly German drones, demonstrating that the qualities of the father were not erased but only hidden. A similar pattern is observed, only in reverse, when a German queen is mated with an Italian drone” (our italics, p21).

The analogy with the segregation and recessiveness of traits in Mendel’s pea crossings will not have escaped Mendel’s and Nave’s minds. The fact that his friend Johann Nave knew about Dzierzon’s findings, from 1858 onwards, makes it likely that Mendel also knew this before he completed his pea experiments and completed the text of his lectures in spring 1865. Conway Zirkle (1951) also suggested that Dzierzon’s findings in bees in 1854 might have inspired Mendel to think in terms of discontinuous variation and ratios. However, Weiling (1994) considered it very unlikely that Mendel knew about
Dzierzon's results before the second half of 1865 (by which time Mendel had already presented his experiments) and also argued that Dzierzon's initial findings were less convincing and only later were confirmed. Radlkofer however, gives a very clear summary, which Mendel will have known before he gave his lectures early in 1865. The demonstration of Italian and German bees and their hybrids at the NSS meeting of July 1864 also suggests that Dzierzon's findings of hybridization were known by that time (Anonymous 1865).

That Johann Nave's interest went further than fertilization processes in algae, and that he, like Mendel, also took an interest in the hybridization of flowering plants is evident by the fact that he possessed a copy of Wiegmann's “Hybrid formation in the plant kingdom” (Die Bastarderzeugung im Pflanzenreiche, 1828). In this pamphlet, Wiegmann describes the results of 36 experimental crosses in nine different crop genera, including pea and bean. He confirmed Kolreuter’s findings of sexuality in plants which had been criticized by others and describes increased variation in offspring from hybrids and the occurrence of dominance in certain crosses. Wiegmann’s publication is mentioned in books on the history of genetics (Roberts 1929; Stubbe 1965; Olby 1966). Roberts (1929) characterizes his work “as the work of a man….willing….to dispute freely the authority of other investigators, such as Linnaeus, Köreuter and Gärtner and withal, a man with a practical bias for and sympathy with agriculture”. Mendel himself owned a copy of Gärtner's 1849 masterpiece “Experiments and observations about hybrid formation in the plant kingdom” (Versuche und Beobachtungen über die Bastarderzeugung im Pflanzenreich), which was published more than 20 years later and much more comprehensive than Wiegmann’s publication.

Conclusions

Our investigations substantiate Iltis' opinion that we form a false picture of Mendel if we think of him only as a scientist and a recluse. He did not spend all his days within the monastery and was familiar with a broader world. In fact, he was one of the first to join a new international all-inclusive group tour, which later became very popular. These pleasure trains were expensive (fl 250, for comparison: about half of the year income of a full teacher at the Oberrealschule; Mendel, as a supplement teacher, will have earned considerably less). Since Richter could not find the trip in the financial books of the monastery, it seems that Mendel could afford it privately.

From his artificial hybridizations, which had begun in 1856, probably aiming to develop better pea varieties (Van Dijk et al. 2018), Mendel had deduced a theory of non-blending inheritance. In 1862 and
1863, Mendel was conducting backcrosses to test his hypothesis that the hybrids formed equal numbers of kinds of fertilization cells and that the segregation ratios were determined by random union of the fertilization cells (Fisher 1936; Orel 1971). The summer of 1862 must have been a very exciting time for Gregor Mendel since the first results of the seed traits (color and shape) must have become available, no doubt he would have discussed this topic with Johann Nave during their trip together. Therefore this journey was probably of significance in the origin of genetics.

Mendel’s fertilization hypothesis was the main subject of his second lecture according to the Brünner Zeitung (20-03-1865): “After a clear presentation of the most recent findings of the research on the genesis and development of the plant germ [i.e., the embryo] in general, the lecturer sought to utilize them in the formation of the hybrids, and developed a hypothesis concerning the factors involved in this process, confirmed by a large number of meaningful and highly successful experiments, which could significantly contribute to the elucidation of this hitherto inaccurately observed process” [our italics]. The newspaper Neuigkeiten (10-03-1865) also stated that Mendel spoke about “cell formation, fertilization and seed development in general and in hybrids in particular”.

Scientific interaction between Gregor Mendel and Johann Nave has been suggested (Iltis 1924; Orel 1996) without much substantiation. Our study has now provided clear evidence for their close friendship and common scientific interests. The highly relevant books that were donated to the NSS by Franz Czermak in January 1865 previously seemed to have only become available to Mendel too late to have influenced his experimental design. We now know that they belonged to his close friend Johann Nave and were available halfway through his pea experiments and it is hard to believe that the friends did not discuss them. Together with his patron abbot Cyrill Napp and his professor Franz Unger, his friend Johann Nave has to be seen as one of the three people who most influenced Mendel's thinking about heredity.

Acknowledgments

We are grateful to the members of the Society for Amsterdam retired policemen (SPA) for their judgment of the two photographs of Johann Nave. Franjo Weissing improved our English translations of some German texts. We thank Charlie Underwood for his comments on a draft version of the manuscript.
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ANONYMOUS:

1862a. Medals and honourable mentions awarded by the international juries; with a list of jurors, and the report of the council of chairmen. G. E. Eyre and W. Spottiswoode, London.


1863. Verzeichniss der Mittglieder am Schlusse der Jahres 1862. Verhandlungen des naturforschenden Vereines Brünn, Sitzungsberichte, 1: XIV-XIX.

1865. Sitzung am 10 Juli 1864. Verhandlungen des naturforschenden Vereines Brünn, Sitzungsberichte, 3: 3-60.


LORENZANO, P., 2011. What would have happened if Darwin had known Mendel (or Mendels work)? History and Philosophy of the Life Sciences 33: 3-49.


https://books.google.nl/books?id=z78AAAAAcAAJ&redir_esc=y
Appendix I

Translation of the article with the sign-in list, published in *Die Presse* (29-08-1862) (Fig. 2).

Submitted.

The city of Stuttgart has created through the very warm and genuinely fraternal welcome to the participants of our second pleasure train, a glorious remembrance for all times in all our hearts. The whole group and each person individually expressed this feeling in heartfelt words of thanks on the spot and on the way back from Salzburg. Equally unanimous, however, was the wish of the Austrian travelers to present some tangible token in their remembrance to the Stuttgart Chamber of Commerce, to whom they owed this unforgettable day. With this, we present the result of the first signup list for this aim, which already opened during the trip, and add the following request: No decision was taken about the form of the remembrance, and due to the dispersion of participants over the *Kronländer* we can no longer consult all. We ask the participants from Vienna to contact us to discuss the next steps and, if necessary, to form a committee. [The 142 names are listed in Table 1]

The entrepreneurs,

Joseph Neumeyer & Mihailovičs.
Appendix II

Translation of the advertisement for the originally planned second and third pleasure trains (Fig. 3).

Second and third

Pleasure train

To Paris and London

For the on July 24th and July 30th this year from Viennese Western Station departing Pleasure train to Paris and London certificates with detailed travel program will be issued from the ticket office at the Western Station only till (and including) July 15th. The fare is determined to fl 250 Austrian Viennese banknotes and the journey is generally carried out in wagons of the 2nd class; For this the travel period is extended with 3 days and the participants are offered new pleasures and points of interest, like: 7 days stay in Paris, 6 days in London, 1 day and night in Stuttgart, accommodation, boarding, Grand Opera in Paris (parterre and loge), Omnibus travel, porters, pleasure trains to St. Cloud and Versailles, Bois de Boulogne, Napoleon’s tomb, the Tuileries and their art collection, and so on. 1 Thames cruise to Greenwich and Woolwich, visit of the museums, the arsenal, the Thames tunnel, the docks, etc. ect. An omnibus trip and free entrance of the famous Cremorne Garden. A trip with a pleasure train to the Sydenham Cristal Palace, 2 days free entrance to the Industry Exhibition, 1 day tour for Bank, Stock Exchange, Guildhall, Tower, St. Paul’s Cathedral, Monument, Newgate, Hyde-Park, Houses of Parliament, Westminster quarter, British museum, and the Zoo, etc, etc.

The number of participants for each train is restricted to 300 persons, because only 600 certificates will be made available for the two trains. For the train that departs on July 24th white certificates, for the train that departs on July 30th red certificates will be issued; Therefore certificates for the third train will only be made available before the second train is completed upon urgent request.
The Klagenfurter Zeitung (20-08-1862) describes the crossing as follows:

“According to reports from London about Neumeyer’s pleasure train, the entire travel company is well and uninterruptedly in the best mood. The sea passage was very rough this time. The English ship "Prince Eugene" took the travelers up in the port of Boulogne; at the embarkation part of the luggage was loaded on another ship, but the mistake was noticed early enough, and a few telegraphic telegrams from Mr. Neumeyer sufficed. The ship sailed out of the harbor at 6 o'clock in the morning, the sea became restless, and three or four times the waves made their way over the foredeck, the greater part of the travelers became seasick, but the company as such never lost its good humor. During the sea journey and disembarkation at Folkestone, most travelers lost their headgear as a result of the intense storm.”

“The weather reports of August 7, 8 a.m., speak of strong winds in Yarmouth and storm and rain in Portsmouth. Chimneys, roof tiles, and gutters came down in London, injuring several people. It was even worse on the Thames, ships crashed, and barges overturned. Three people died” (Algemeen Handelsblad 11-08-1862).


The struggle between Prussia and Austria for hegemony within the German League led four years later, in 1866, to the Prussian Austrian war which was won by Prussia. The Prussians also occupied Brünn and the St. Thomas monastery had to provide housing for the Prussian army. Gregor Mendel wrote about the Prussian occupation in a letter to his brother-in-law (August 31st, 1866) and talked about the enemy (der Feind) and about the cholera epidemic that the Prussians brought with them.

BB in the Wiener Zeitung (19-08-1862): “When crossing the Franco-German border at Rastatt, the Austrians were welcomed with music by the Federal German troops. Around 10 p.m., they reached Stuttgart, where a large crowd had gathered. Here too, the reception was with music, including the Austrian Radetzky March and the German patriotic song "Was ist des Deutschen Vaterland? (What is the German fatherland?)". At the station, Dr. Oskar Fraas, the president of the Stuttgart Chamber of Commerce, addressed the Austrian travelers. The next day was a day of rest, and the travelers were
again awakened with music. Representatives of the Chamber of Commerce guided the travelers to interesting sights. In the afternoon, they first shared coffee and then went to the beer garden, where great fraternization occurred between the travelers and the Stuttgarter population. Dr. Th Pisling spoke on behalf of the Austrians, shedding some light on the commercial, political situation, and emphasizing the unifying power of German labor. "Dr. Doleschal of Debrecen [Hungary] praised in warm words the merits which the German nation had acquired for culture and freedom and expressed the conviction that this nation could never have the intention of suppressing foreign individuality. Merchant Gutbrod of Stuttgart celebrated trade as the power to which we also owe this joyful meeting, and welcomed the imminent customs union. So it continued, with interruptions by a few rain showers, until the leader of the pleasure train finally urged to hurry up. The assembly moved arm in arm towards the city. All the windows were densely occupied, farewell greetings waved to each other, and from the guesthouses decorated with German, Austrian, and Württemberg flags, a massive crowd of people escorted us to the platform of the station. New friends said goodbye with firm handshakes and promising a reunion in Vienna parted. The cheers could be heard for a long time, as we drove under thunder and lightning into the night. From Salzburg, the travelers sent telegraphic greetings and thanks to their friends in Stuttgart on entering the home soil.”

vi “The pleasure trains have not stopped yet, a new one is announced [to the October fest in Munchen]…One has photographed the people who were part of the pleasure train from Vienna to Paris, why not take a picture of those who travel on the pleasure train from Vienna to Munich? The idea of photographing people who, either because of their economy or because of their fortunate position………..has always seemed to me supremely ridiculous…….. I understand that we are photographing a group of the rulers of Europe, the famous artists, the famous writers, the famous generals, but what I cannot understand is that the public has to admire a party who traveled in a pleasure train. So, in a hundred years or more, assuming that photographs do not deteriorate too much, the future generation may find the photographs of our days, and when asked what are these heads, the answer will be: They are persons who, in the year 1862, the year in which the constitution was given to
Austria by Emperor Francis Joseph, made the journey from Vienna to Paris in the pleasure train! And the people would laugh, seeing persons pass this way to posterity.”

The new pleasure trains were the subject of discussion in the Viennese Bierhallen and Kaffeehäuser. “it seems that nowadays having been on a pleasure train has a little merit, because the other evening at the Daum cafe, I saw two gentlemen raise their heads when they saw a small, thin, dry man, his nose adorned a binocle. ‘Who is that gentleman?’ said one. ‘He has been to Paris and London with a pleasure train’ replied the other.”

On November 23th a large concert with music by Offenbach and Straus Jr was staged in the Diana hall in Vienna with a large military tableau entitled: "Der Vergnügungszug nach Paris und London". (Fremden-Blatt 23-11-1862). At the end of December 1862, the play "1862" was staged at the Carl theater in Vienna with a scene entitled "Der Vergnügungszug nach London", complete with a decor of the interior of a train wagon (Der Zwischen-Act, 27-12-1862). “Vergnügungszug” became such a well-known concept that it was also used figuratively. For example, the Treumann Theater (Theater on Franz Josef Quai) presented the musical / revue "Wiener Vergnügungszug durch das Jahr 1862" with highlights of the past theater year (Fremden-Blatt 28-12-1862).

The Brünner address book from 1862 only contains the name of “Nave, Johann, k. k. Finanz-Landes Directions-Concipist, Unterzeil 50”. In 1853 it reads: "Nave, Katharina, k.k. Rechnungsrathwitwe, Ledergasse 34" (in also in 1858, but in 1862: "Nawe, Katharina, Ledergasse 34; another example of inconsistent spelling). Katharina Nave is probably the mother of Johann Nave. These are the only persons with the surname “Nave” in Brünn.

On the same day, one of the participants, “S. Bals”, is listed in the same hotel. The name Bals, without initials, can be found on the sign-up list, and on August 19th, a “Bals” can be found again in das Goldenes Kreuz, only now with "J" as the initial. Because this is a rare surname, this is probably the same person, and this S - J confusion reflects that for S. Nab[v]e for J. Nab[v]e mentioned earlier.

"It is indeed possible to demonstrate along theoretical lines that this assumption would suffice to explain the development of hybrids in each individual generation, if at the same time one were allowed
to presuppose that the different species of germ- and pollen cells are formed in equal quantity on average on the hybrid.

In order to put these presuppositions to test by way of experiment, the following trials were selected: Two forms that were constantly different with respect to seed shape and colouration of the albumen were conjoined through fertilisation.” (Mendel 1866b)

Words identical in the publications of Nave and Radlkofer are underlined. This suggests that Nave had read Radlkofer’s publication.

Nave p98:

“Erst die Beobachtungen Areschougs an den Zygnemeen haben in der Neuzeit so befriedigende Aufschlüsse gebracht, dass die Copulation als ein wirklicher Befruchtungsakt angenommen werden darf.” (Recently Areschoug's observations on the Zygnemeen have provided such satisfactory facts that copulation can be assumed to be a real act of fertilization.)

Radlkofer p25:


Radlkofer p82:

Die Beobachtungen Areschougs haben jede Schwierigkeit hinweggeräumt, welche uns hindern könnte, denselben als einen wirklichen Befruchtungsact anzusehen.

xii „so viel steht fest, dass der Pollenschlauchinhalt das Analogon der Spermatozoiden, das Keimbläschen das Analogon des Eies ist, dass der Befruchtungsprocess der Phanerogamen durchaus dem der Kryptogamen, dem der Thiere entspricht“.