Carl Friedrich Gauss' Correspondents in the Baltics

Karin Reich
Elena Roussanova

Department of Mathematics ST,
University of Hamburg
Bundesstraße 55,
Hamburg D 20146, Germany
e-mail: Karin.Reich@uni-hamburg.de
e-mail: Elena.Roussanova@uni-hamburg.de

Abstract: *During his whole lifetime, Carl Friedrich Gauss had a close relationship with the Baltics. In 1809 he was offered a professorship at the University of Tartu (Dorpat) but he did not accept the offer. Most of his correspondents, as those of Georg Friedrich Parrot, Friedrich Parrot, Wilhelm Struve, Johann Heinrich Mädler and Thomas Clausen, were connected with the University of Tartu. In 1821, Gauss' old school friend, Martin Bartels, moved from the Kazan University to Tartu. But we must also mention the brothers Carl Heinrich Kupffer and Adolph Theodor Kupffer. Gauss was further in correspondence with scientists working in Latvia, as for example with Magnus Georg Paucker in Mitau (Jelgava). Of course, he had friends at the Observatory of Vilnius (Wilna). In fact, the first mathematical journal was published in the Russian language in Tallinn.*

Keywords: *Carl Friedrich Gauss, history of science*

This discussion, which is sketched here only shortly, is part of our soon-to-be published book *Gauß und Russland. Gauß' Briefwechsel mit in Russland wirkenden Wissenschaftlern*. The book will be published in 2011 by the Göttingen Academy of Sciences.

Carl Friedrich Gauss (1777–1855)

Gauss was born on April 30, 1777, in Brunswick. When still a schoolboy, his mathematical abilities were recognized. These early abilities were so impressive that he received, as a young boy, financial support from the Duke of Brunswick-

Wolfenbüttel, Carl Wilhelm Ferdinand (1735–1806). Gauss was now in the position to attend the Collegium Carolinum in Brunswick (from 1792 to 1795) and to study mathematics at the University of Göttingen (from 1795 to 1798). In 1799, Gauss' thesis was published in which he had developed the fundamental theorem of algebra. In 1801, his main work on number theory, the famous *Disquisitiones arithmeticae* was published.

Gauss was also interested in the astronomical application of mathematics and he calculated the motion of the newly discovered asteroid Ceres. It had been discovered first in February 1801, but was lost track of shortly afterwards. However, using the method of Gauss, astronomers were able to find Ceres again. With this success Gauss became an internationally famous and recognized scientist not only among mathematicians but also among astronomers. Meanwhile, the duke still provided Gauss with the necessary financial support and paid him a salary as a private scientist. This lasted until the duke died on November 10, 1806, shortly after he was wounded during the battle in Jena and Auerstedt. Since 1807, Gauss was professor of astronomy in Göttingen and director of the observatory.

Russian Emperors Alexander I (r. 1801–1825) and Nicholas I (r. 1825–1855)

During the largest part of Gauss' lifetime the whole of the Baltics belonged to the Russian Empire. In 1801, the same year when Gauss became famous all over the world, the new emperor, Alexander I (1777–1825), took over the reign in Russia. Until then Russia had had only one university – the University of Moscow, founded in 1755. Alexander I founded six new universities in:

1802 Dorpat (Tartu),[1]
1803 Wilna (Vilnius),[2]
1804 Kazan,
1804 Kharkov,
1816 Warsaw, and
1819 St Petersburg.

[1] The first university in Dorpat was founded under the Swedish King Gustav II Adolf in 1632, but this university moved to Pernau and was closed in 1710. In the 17th century Dorpat was the second university in the Swedish Empire, next to the University of Uppsala (Donnert, 2007, pp. 17–35).

[2] In Wilna the Alma Academia et Universitas Vilnensis Societatis Iesu was founded in 1578; the Jesuit order was dissolved in 1773. In 1795, Lithuania became a part of Russia, so the university was refounded in 1803.

After the death of Alexander I in 1825, his youngest brother Nicholas succeeded him to the throne. Under the reign of Nicholas I (1796–1855), the universities of Warsaw and Wilna were closed in 1832 because of the Polish revolt, but in spite of this the University of Kiev, the University of Saint Vladimir, was founded in 1834. Also the foundation of the University of Helsingfors in 1828 should be mentioned,[3] because since 1809 Finland had also belonged to Russia; it was given a special kind of autonomy. In 1817, the later Emperor Nicholas I was married to Charlotte,[4] daughter of the Prussian King Friedrich Wilhelm III (1770–1840); as a result the relations between Russia and Prussia were very close. Nicholas I died in 1855, the same year as Gauss.

As mentioned earlier, two new universities were founded in the Baltics: in Dorpat and in Wilna. The more important one was the University of Dorpat, where the physicist Georg Friedrich Parrot became the first professor of theoretical and experimental physics, even before the university was founded, in 1800. In 1802/1803 he became the first rector, and in 1803 dean of the Faculty of Philosophy.

Georg Friedrich Parrot (1767–1852)

Parrot, born in Mömpelgard (Montbéliard), was a citizen of Württemberg, therefore he was educated in the Hohe Karlsschule (during the years 1782–1786), located in the capital, Stuttgart. This school had a status between that of a gymnasium and a university. The most famous students of this school were the biologist Georges Cuvier (1769–1832), the mathematician Johann Friedrich Pfaff (1765–1825) and, last but not least, the German poet Friedrich Schiller (1759–1805). Afterwards Parrot became a private teacher in Normandy and in Karlsruhe as well as in Offenbach, close to France, where the French Revolution broke out in 1789.

Since 1795, Parrot lived in the Baltics, at first in Riga and since April 1802 in Dorpat. He was promoted by the University of Königsberg in 1801, and his thesis was titled *Ueber den Einfluß der Physik und Chemie auf die Arzneykunde nebst physik[alischer] Theorie des Fiebers und der Schwindsucht. Dissertation zur Erlangung der Würde eines Professors der Physik an der Dorpatschen Universität.* This kind of addition is very unusual: Parrot was

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[3]   Since 1640 there had been an academy in Åbo, which was moved to Helsingfors after a disastrous fire in 1828. The new university got the name Imperial Alexander University.

[4]   Charlotte of Prussia (1798–1860) is known in Russia under the name Aleksandra Fedorovna.

promoted in Königsberg in order to become professor in Dorpat! In 1802, Parrot met the Russian Emperor Alexander I for the first time, and a close relationship between the two men developed. This special relationship was the reason why the University of Dorpat received privileges that other Russian universities did not; the new university had more freedom, very liberal statutes, and received a larger financial support than usual (Bienemann, 1902). It should be mentioned that German was the common language at the University of Dorpat.

Since 1804, Johann Wilhelm Andreas Pfaff (1774–1835), the younger brother of the mathematician Johann Friedrich Pfaff (1765–1825), was professor of Mathematics and Astronomy in Dorpat. During Pfaff's time, an observatory was planned and built, but it was ready only in 1810. Pfaff, however, left Dorpat in 1809 and became professor in Nürnberg and later in Erlangen.

Georg Friedrich Parrot was one of Gauss' correspondents. There exists a letter from Gauss to Parrot dating from 1809 and two letters from Parrot to Gauss from 1826.

After the astronomer Pfaff had left Dorpat, Parrot tried to persuade Carl Friedrich Gauss to become Pfaff's successor (Müürsepp, 1978). Gauss did not agree because at that time mathematics and astronomy were the field of only one professor at the University of Dorpat. So it would have been necessary for him to give mostly lectures to beginners, not only in astronomy but also in mathematics. Also, the financial support for children and widows was worse in Dorpat than in Göttingen. At that time, Gauss had a family.[5] So, Johann Sigismund Gottfried Huth (1763–1818), who previously had been professor of mathematics in Kharkov, followed Pfaff.

The two later letters of Parrot,[6] dating from 1826, concern Parrot's mathematical theory of the tides. These letters of Parrot are the only source we have: Gauss was quite familiar with a detailed mathematical theory of the tides. The letters show that Gauss was able to convince Parrot that his own gravitational theory was superior and the theory of Parrot was partly wrong. Parrot accepted this and hoped that Gauss would publish his theory, but unfortunately this never happened. In the same year of 1826, Georg Friedrich Parrot moved from Dorpat to St Petersburg, where he became a member of the famous Academy of Sciences, founded in 1724/1725.

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[5] This letter from Gauss dating from August 20, 1809 was published several times; the most recent edition is given in Depman 1956, pp. 242–244.

[6] SUB (Staats- und Universitätsbibliothek) Göttingen, Gauss-Nachlass. The letters mentioned in the following text are all located in Göttingen in the Gauss-Nachlass, if nothing else is said.

Wilhelm Struve (1793–1864)

Wilhelm Struve was born in 1793 in Altona (near Hamburg), which at that time belonged to the Kingdom of Denmark. Struve had studied in Dorpat since 1808 and finished his thesis in 1813; Huth was his supervisor. The title of Struve's thesis was *De geographica positione speculae astronomicae Dorpatensis*; it was published in 1813 in Mitau (Jelgava) (Struve, 1813). A copy exists in the Gauss Library in Göttingen[7] – this suggests that there were contacts between Gauss and Struve even at this time. The Gauss Library still exists: it is no longer complete, but the larger part of it is preserved within the library of Göttingen. In 1813, Struve became extraordinary professor of mathematics and astronomy at the University of Dorpat; in 1820 he became ordinary professor of astronomy. It should be mentioned that his chair was for astronomy only, because at this time the subject of Mathematics became separated from Astronomy.

Struve was the one who transformed the Observatory of Dorpat into one of the very best in Europe; he founded the journal *Observationes astronomicae institutae in specula Universitatis caesareae Dorpatensis*, published in Latin. He himself published 8 volumes: the first one for the years 1814/1815 was published in 1817, the last one for the years 1831–1838 in the year 1839.

Struve had a large influence and could afford to buy very expensive instruments, among others, in 1824, the famous refractor telescope of Joseph von Fraunhofer (1787–1826), who worked in Munich.

It was especially with this instrument that Struve made his most successful observations, the results of which were published in catalogues of double stars (Struve 1822; 1827; 1837), and the measurement of the parallax of α Lyrae (Struve, 1840). Some of Struve's observations of the parallax were even earlier than of Bessel's of 61 Cygni (Ławrynowicz, 1995, pp. 191–214), but Struve's publication came later. The reason for that was the building of the new Main Observatory in Pulkovo near St Petersburg, which was inaugurated in August 1839.

Since 1816, Struve was in charge of surveying the Baltics. It is known that Struve was able to understand and speak Estonian and Latvian. Gauss himself began surveying the Kingdom of Hanover in 1820. Gauss and Struve met during the measurement of the basis in Braak, near Hamburg.[8] This measurement was

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[7]   Gauss Library 1370, with a personal dedication from Struve: "*Dem Herrn Professor Gauß hochachtungsvoll, der Verfasser*".

[8]   Letter from Struve to Gauss from November 11 (October 30), 1821.

directed by Heinrich Christian Schumacher (1780–1850), who was a Danish citizen and lived in Altona. The Danish King Frederik VI (1768–1839) paid for this very expensive operation. This basis was used by both, Gauss and Schumacher, for the triangulation of Denmark as well as for the triangulation of the Kingdom of Hanover.

Struve's most famous triangulation was the so-called Struve Meridian Arc which started in Norway and ended at the Black Sea, at the mouth of the Danube. Dorpat is located directly on this meridian ([Fuss], 1853). The measurement was finished only in 1855. This Struve Arc now belongs among the UNESCO World Heritage sites.

Struve and Gauss exchanged many letters: 22 of these, written between 1815 and 1847, still exist. In their correspondence Gauss and Struve exchanged mostly their results in surveying and astronomical data.

In one of his letters, written on December 21, 1821, Gauss explained Struve his newly invented astronomical instrument, the heliotrope. With this instrument Gauss was able to survey distances larger than 100 kilometres; such large distances could not be measured by means of ordinary instruments.

Figure 1.   Gauss' heliotrope, letter from Gauss to Struve, December 21, 1821
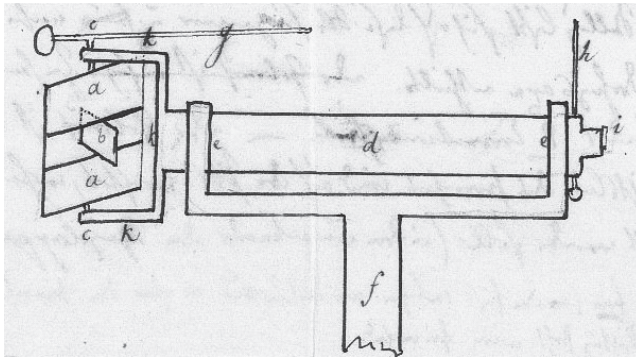
Source: SUB Göttingen, Gauss-Nachlass

As Struve's answer from September 15/27, 1822 shows, he was fascinated by the heliotrope and immediately tried to supply his own surveying group with several of such instruments.

Further, many of Struve's publications can still be found in the Gauss Library. In 1835, Struve became member of the Göttingen Academy of Sciences, supported by Carl Friedrich Gauss.

In 1839, Struve left Dorpat for the new observatory in Pulkovo, near St Petersburg, where he became its first director.

Johann Heinrich Mädler (1794–1874)

Struve's successor in Dorpat was Johann Heinrich Mädler (Eelsalu & Herrmann, 1985). He had become famous when collaborating with Wilhelm Beer (1797–1850) in Berlin. Their maps of the Moon were admired by astronomers; Gauss himself was impressed by their accuracy. Mädler got Gauss' special support when the chair of Struve became vacant. There is no doubt that Struve had favoured the young Estonian scientist Karl Eduard Senff (1810–1849), but Gauss decided in favour of Mädler. Not surprisingly, it was Gauss' favourite Mädler, who was given the chair in 1840. Mädler continued Struve's work: The publishing of *Observationes astronomicae* was continued, though not in Latin but in German under the title *Beobachtungen der Kaiserlichen Universitäts-Sternwarte Dorpat*. Under Mädler volumes IX (1842), X (1843), XI (1845), XII (1850), XIII (1856). XIV (1856), XV (1859, 1863) and XVI (1866) were published.

As far as the correspondence between Gauss and Mädler is concerned, eight letters are known, of which two, dating from 1842 and 1843, were written in Dorpat. Mädler mentioned that the observatory in Dorpat was very well equipped and how happy he was living in Dorpat. Gauss got information of Mädler's most recent observations and Mädler sent him his new publications; also the volumes IX, X and XII of the *Beobachtungen* are in the Gauss Library (Gauss Library 761).

However, Mädler's fame in Dorpat was not comparable to Struve's. In 1866, Mädler retired and returned to Germany. Thomas Clausen succeeded him.

Thomas Clausen (1801–1885)

Gauss had supported Clausen throughout his whole life. He began his career as an assistant of Heinrich Christian Schumacher at the observatory in Altona, then Denmark. Unfortunately, Clausen fell in love with Schumacher's niece and therefore was forced to leave Altona. Gauss helped him as far as possible. In 1842, Clausen became observer in Dorpat and in 1854 he became corresponding member of the Göttingen Academy. Of course, this honour was due to Gauss' support (Biermann, 1964).

There exists only one letter from Clausen to Gauss, which dates from January 1, 1855: Clausen reported about his achievements in surveying, in astronomy and even in mathematics. For example, Clausen showed that the Fermat number $2^{64} + 1$ did not have a prime number as result as expected – it was the product of two prime numbers, one of them had 14 digits and that was considered the largest prime number at that time. Fermat numbers are defined as $F_m := 2^n + 1$, $n = 2^m$. In the case of m=1, 2, 3, 4 the results are prime; in the case of m=5 Euler had shown that the result was not prime and in the case of m=6 Clausen had shown that the result was not prime.

When Mädler retired, Clausen was 65 years old. However, he succeeded Mädler and retired in 1872. Clausen stayed in Dorpat where he died in 1885, and his grave still exists. Unfortunately, however, Clausen did not continue the publication of *Observationes*, initiated by Struve, or the *Beobachtungen*, continued by Mädler.

Magnus Georg Paucker (1787–1855)

Paucker was born in the small Estonian village of Simuna (St Simonis). In 1805, he began his studies in astronomy and physics at the University of Dorpat, with Georg Friedrich Parrot and Johann Wilhelm Andreas Pfaff as his most important professors. In 1808, Paucker took part in the surveying of the Emajõgi (Embach) river and in 1809 he contributed to the construction of the first optical telegraph in Russia in Tsarskoe Selo near St Petersburg. In 1811, Paucker took over the tasks of an observer at the University of Dorpat, after the astronomer Ernst Christoph Friedrich Knorre (1759–1810) had died in 1810. In 1813, the year when Wilhelm Struve finished his thesis in Dorpat, Paucker also finished his thesis which had the title *De nova explicatione phaenomeni elasticitatis corporum rigidorum*; although this was a dissertation in physics, his supervisor had been the mathematician Huth.[9] A copy of this work can also be found in the Gauss Library (Gauss Library 1278). Because it was Struve who became assistant and later professor in Dorpat, Paucker left Dorpat in 1813 and became professor of mathematics at the Gymnasium Illustre in Mitau (Jelgava); he stayed there for the rest of his life. This gymnasium was founded in 1775 by Peter von Biron (1724–1800), Duke of Courland, and was at first called Academia Petrina but in 1806 it had been named Gymnasium Illustre. The gymnasium owned a very large library and there was also a small observatory.

In 1815 in Mitau the Kurländische Gesellschaft für Literatur und Kunst was

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[9]   Huth had also been the supervisor of Struve's thesis.

founded. Paucker became its perpetual secretary and in 1819 Gauss became an honorary member of this society. The diploma, dating from June 1, 1819 still exists, it is signed by Paucker and it is preserved in Brunswick.[10] Shortly afterwards Paucker published his work *Ueber die Anwendung der Methode der kleinsten Quadratsumme auf physikalische Beobachtungen*, where he quoted in detail Gauss' and Legendre's contributions to this subject; a copy of Paucker's work can be found in the Gauss Library (Paucker, 1819).

Paucker was familiar with Gauss' work, especially with his mathematical output. In 1822, he published his contribution *Geometrische Verzeichnung des regelmäßigen Siebzehn-Ecks und Zweyhundersiebenundfünfzig-Ecks in den Kreis* (Paucker, 1822). Quoting Gauss' *Disquisitiones arithmeticae* Paucker treated the theory and the construction of the regular polygons with 17 and 257 sides. Generally, Friedrich Julius Richelot (1808–1875), a student of Carl Gustav Jacob Jacobi (1804–1851), is mentioned as being the first who had achieved the theory and the construction of the polygon with 257 sides (Richelot, 1832), but Paucker was much earlier. Within this contribution Paucker published a letter from Gauss, dating from January 2, 1820. In this letter Gauss expresses his thanks for Paucker's publication and tells Paucker details about the achievement of his own results.

Gauss also mentioned that there was nobody in Germany who was able to present further developments in number theory. So Gauss was very happy to have found a new friend:

> *Ich freue mich daher um so mehr, wenn ich sehe, daß diese herrliche Wissenschaft [= die höhere Arithmetik] einen neuen Freund gewinnt, da die Anzahl solcher, die sich damit vertraut gemacht haben, äußerst klein ist. In der That kenne ich bisher in Deutschland keinen einzigen. (Paucker, 1822, pp. 217–219)*

Paucker was not only interested in number theory but also in geometry. In 1823, his *Plane Geometry* was published, and dedicated to Gauss: "Dem Archimedes der Deutschen Dr. Carl Friedrich Gauß, ordentlichem Professor der Astronomie in Göttingen, Königl. Großbritannischem Hofrath, Ritter des Guelphen= und Dannebrog=Ordens etc. etc. in Ehrerbietung und Hochachtung gewidmet vom Verfasser"(Paucker, 1823).

Paucker wrote many articles and textbooks; very often he quoted Gauss, so Paucker was really an expert as far as Gauss' work is concerned.

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[10]   Stadtarchiv Braunschweig, shelfmark G IX 21: 44 Nr. 7.

Since 1823, Paucker had been interested in Russian meteorology: he published several articles concerning the Russian system of measurements. Finally he wrote a huge *Handbuch der Metrologie Rußlands und seiner deutschen Provinzen*. For this work Paucker received the Demidov Prize. This award was the highest scientific honour in Russia at this time; the originator of this award was Pavel Nikolaevich Demidov (1798–1840), who was a philanthropist and belonged to the very rich Demidov family. In 1832, Paucker received the first Demidov award and also the full prize, though his voluminous contribution was written in German and not, as expected, in Russian (Mezenin, 1987).

Martin Bartels (1769–1836)

When Wilhelm Struve became ordinary professor of astronomy in 1820, it was Martin Bartels (Lumiste, 1997), who in 1821 obtained the Chair of Mathematics; Mathematics and Astronomy were from then on split at the University of Dorpat.

Gauss and Bartels had been friends since Gauss went to the primary school in Brunswick, and they remained friends during Bartels' lifetime. Bartels is the only one among the correspondents mentioned here who was older than Gauss. Bartels had been professor of mathematics at the Kazan University from 1808 to 1821.

There exist five letters from Bartels to Gauss: one was written in Kazan and the two last ones in Dorpat (Biermann, 1973). Bartels' daughter Johanna became Wilhelm Struve's second wife.

In 1822, Bartels published his textbook *Disquisitiones quatuor*, and sent a copy with a personal dedication to Gauss: "Seinem verehrten Freunde Herrn Prof. und Ritter Hofrath Gauß in Göttingen zum freundschaftlichen Andenken der Verfasser den 12./24. Nov. 1822. Dorpat" (Bartels, 1822). Bartels was an excellent teacher: in Dorpat he had many students who became quite famous later. We should mention at first Karl Julius Senff (1804–1832) and Karl Eduard Senff. Karl Eduard Senff's thesis contained the famous Frenet-Serret formulas (Senff, 1831) – as Ülo Lumiste (1963) has stated, important formulas in differential geometry. Karl Eduard Senff sent his thesis also to Gauss, and it still exists in the Gauss Library. The thesis is decorated with a handwritten dedication: "Herrn Hofrath und Ritter Profeßor Gauß" (Senff, 1831). Senff was decorated with a golden medal for his mathematical achievements. Also, Petr Ivanovich Kotel'nikov (1809–1879) und Vasilii Ivanovich Lapshin (1809–

1888), two Russian students of Bartels, have to be mentioned. Both became university professors later: Kotel'nikov in Kazan and Lapshin in Kharkov and Novorossiisk.

Friedrich Parrot (1791–1841)

The Physics Chair in Dorpat was for some time in the hands of the Parrot family. When Georg Friedrich Parrot left Dorpat in 1826, he was succeeded by his son Friedrich Parrot. He participated in five major expeditions:

1) 1811–1812: Friedrich Parrot's and Moritz von Engelhardt's destination was the Caucasus. They investigated animals, plants, minerals, geology, and they also made physical measurements, especially measurements of levelling (the so-called *nivellements*). These researches remind us of those made by Alexander von Humboldt (1769–1859) and Aimé de Bonpland (1773–1858) on their expedition to South and Middle America during the years 1799–1804, when they also climbed the highest known mountain, the Chimborazo in Ecuador. Parrot's and von Engelhardt's highest mountain was Mount Kazbek (5,047 m) in the Caucasus.
2) 1814–1816, Parrot was mountain-climbing in the Alps; there still exists the Parrotspitze.
3) 1817, Parrot undertook an expedition to southern France and was also mountain-climbing in the Pyrenees.
4) 1829, Parrot climbed Mount Ararat (5,165 m); geomagnetic observations played the main role.
5) 1837, Parrot visited the North Cape and made several geomagnetic observations.

Gauss read a review of Parrot's expedition to Mount Ararat, this is how he became acquainted with Friedrich Parrot ([von Hoff], 1835). Later Parrot sent to Gauss and Weber in Göttingen his geomagnetic data which he had made near the North Cape; the main results were published in *Resultate aus den Beobachtungen des magnetischen Vereins*[11], the journal which was founded by Gauss and Wilhelm Weber in 1836.

There exist two letters from Friedrich Parrot to Gauss, both dating from the year 1839, accompanying the geomagnetic results from the North Cape.

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[11] *Resultate aus den Beobachtungen des Magnetischen Vereins im Jahre 1838*, Leipzig 1839, in the part without pagination.

Figure 2. Friedrich Parrot's observation notes

Source: SUB Göttingen, Cod. Ms. Magn. Verein 3: 1837 (Juli bis November).

Further relationships

The following two scientists – Friedrich Theodor Schubert (1758–1825) and Adolph Theodor Kupffer (1799–1865) – did not work in the Baltics, but they lived there for some time. Both had a close relationship with Carl Friedrich Gauss and they exchanged many letters.

Schubert was born in Helmstedt and therefore was a fellow countryman of Gauss. During the years 1783–1785 Schubert was a private teacher or house teacher and a surveyor in Reval (now Tallinn). Since 1785 he had made his career in St Petersburg, where he was at first the so-called adjunct and afterwards ordinary member of the Academy of Sciences. His fields of research were astronomy, surveying, and geomagnetism. Gauss and Schubert exchanged five letters during the years 1802/1803 and 1823.

Kupffer was born in Mitau. He attended there the Gymnasium Illustre where Magnus Georg Paucker had been his teacher. He began his studies at the University of Dorpat, continued in Berlin, and finished in Göttingen. There he also listened to lectures by Gauss. From 1822 to 1826 he was professor in Kazan; then moved to St Petersburg, to the Academy of Sciences. In 1849, Kupffer founded the Main Physical Observatory in St Petersburg, where he was the first director. Kupffer and Gauss worked together on elasticity theory, metrology and especially on geomagnetism. They exchanged 27 letters between 1823 and 1849; Kupffer was one of the most important correspondents of Gauss. It was Gauss who saw to that Kupffer became member of the Academy of Sciences in Göttingen in 1842 and that he was decorated with a special award from the Göttingen Academy of Sciences in 1855.

Adolph Theodor Kupffer's elder brother, Carl Heinrich (1789–1838), was also born in Mitau. He had studied mathematics at the University of Dorpat, but did not become professor there as he had hoped. There still exist three letters from Carl Heinrich Kupffer to Gauss that document this. Instead, Carl Heinrich Kupffer worked as scientific teacher at the main gymnasium in Reval. In 1835, however, Carl Heinrich became professor of mathematics at the Bezborodko Lyceum in Nizhyn. He died before he could have become professor at the newly founded the University of St Vladimir in Kiev.

Carl Heinrich Kupffer was the founder of the first special journal devoted to mathematics, *Uchebnyi matematicheskii zhurnal* (the journal for teaching mathematics), published in the Russian language in Tallinn. This was the first purely mathematical journal in Russia. Unfortunately it existed only in the years 1833 and 1834, because Kupffer left Dorpat. Copies of this journal are not available in Germany, but are to be found in the university libraries of Tallinn and Tartu.[12]

Furthermore, it should be mentioned that Paul Schilling von Canstadt (1786–1837) was born in Reval; he had developed a telegraphic apparatus and

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[12]   We want to thank Mrs. Dr. Katrin Kaugver and Mrs. Malle Ermel for their help in making for us copies of this journal.

worked mostly as a diplomat and was an Orientalist. He too was one of Gauss' correspondents.

The observatory of Wilna was founded in 1753; it was not affected, when the University of Wilna was closed. Gauss was familiar with the achievements of the observatory and was in contact with its directors Jan Sniadecki (1756–1830), Georg Fuss (1806–1854) and Georg Sabler (1810–1865). Gauss appreciated their scientific contributions, although there is no correspondence.

Figure 3. Title page of volume 1 of the journal for teaching Mathematics, Reval 1833.
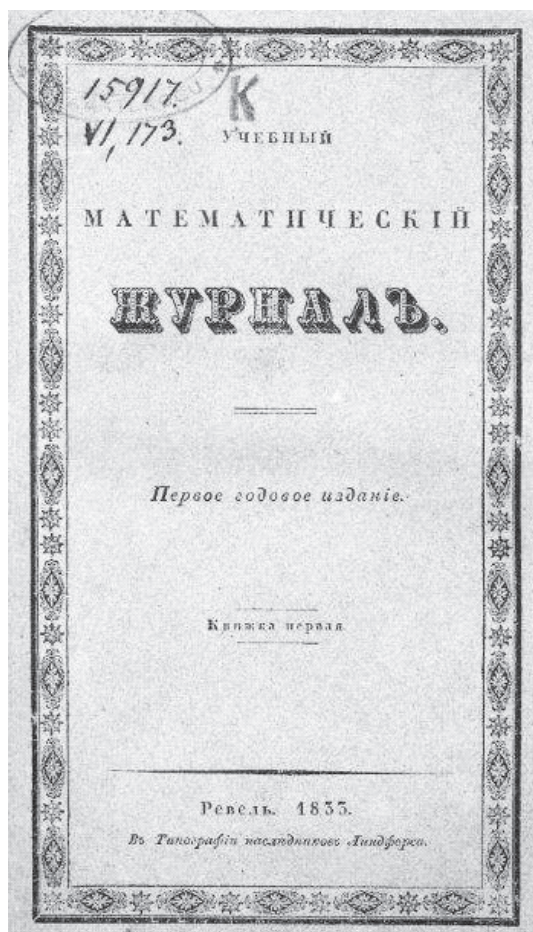
Source: Academic Library of Tallinn University.

Final remarks

As mentioned previously, the Baltics were a part of Russia during the time considered here. The Baltic scientists were appreciated in Russia, and most of the professors in Dorpat were members of the Academy of Sciences in St Petersburg. These were, in alphabetical order: Martin Bartels, Thomas Clausen, Ludwig Kämtz,[13] Karl Friedrich Knorre,[14] Ferdinand Minding[15], Georg Friedrich Parrot, Friedrich Parrot, and Wilhelm Struve (Modzalevskii, 1908). Kämtz, Knorre and Minding did not correspond with Gauss. The only scientist who was mentioned among the correspondents and was not member of the academy in St Petersburg is Johann Heinrich Mädler. The reasons for that are not known.

Very soon the young Gauss came in close contact with the scientists in Russia, especially in St Petersburg. The name Gauss has been mentioned in the records of the Academy of Sciences since 1799; he sent abstracts of his thesis, his *Disquisitiones arithmeticae* and the construction of the regular polygon with 17 sides in St Petersburg in 1800/1801. In 1802, he became Member of the Academy and was offered a position as astronomer, which he did not accept. Summing up, he exchanged letters with the following 17 scientists:

Martin Bartels (Kazan, Dorpat), Thomas Clausen (Dorpat), Nikolaus Fuss (St Petersburg), Paul Heinrich Fuss (St Petersburg), Carl Jaenisch (St Petersburg), Carl Heinrich Kupffer (Dorpat, Reval, Nizhyn), Adolph Theodor Kupffer (Kazan, St Petersburg), Joseph Johann Littrow (Kazan), Nikolai Ivanovich Lobachevskii (Kazan), Johann Heinrich Mädler (Dorpat), Georg Friedrich Parrot (Dorpat, St Petersburg), Friedrich Parrot (Dorpat), Magnus Georg Paucker (Dorpat, Mitau), Paul Schilling von Canstadt (frequently in St Petersburg), Ivan Mikhailovich Simonov (Kazan), and Wilhelm Struve (Dorpat, St Petersburg).

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[13]   Ludwig Kämtz (1801–1867) studied at and graduated the University of Halle. In 1827, he became extraordinary and in 1834 ordinary professor there. In 1842, he got the Chair for Theoretical and Practical Physics at the University of Dorpat. In 1865, he became the second director of the Main Physical Observatory in St Petersburg.

[14]   Karl Friedrich (Karl Khristoforovich) Knorre (1801–1883) was the son of the astronomer Ernst Christoph Knorre (1759–1810), who was extraordinary professor of mathematics at the University of Dorpat and observer at the observatory in Dorpat. Karl Friedrich Knorre had studied astronomy under Wilhelm Struve. In 1821 he became director of the observatory in Nikolaev, in 1828 he became corresponding member of the Academy of science in St. Petersburg.

[15]   Ferdinand Minding (1806–1885) had studied at the universities of Halle and Berlin; he graduated in Halle. In 1830 he became professor in Berlin; in 1843 he got the Chair of Mathematics at the University of Dorpat.

There are still 120 extant letters that will be published in the forthcoming book *Gauss and Russia. Gauss' correspondence with scientists working in Russia.* (Reich & Roussanova, in print). The list makes it clear that Dorpat, Kazan and St Petersburg played an important role for Gauss. It can be said that there was no country where Gauss' work was better recognized than in Russia, and especially the Baltics.

Acknowledgment

References

Bartels, M. (1822), *Disquisitiones quatuor ad theoriam functionum analyticarum pertinentes.* Dorpat: Schünmann (Gauss Library 1090).

Bienemann, F. (1902), *Der Dorpater Professor Georg Friedrich Parrot und Kaiser Alexander I: Zum Säkulargedächtnis der alma mater Dorpatensis*. Reval: F. Kluge.

Biermann, K.-R. (1964), 'Thomas Clausen, Mathematiker und Astronom.' *Journal für die reine und angewandte Mathematik*, vol. 216, pp. 159–198.

—— (1973), 'Die Briefe von Martin Bartels an C. F. Gauß.' *NTM: Internationale Zeitschrift für Geschichte und Ethik der Naturwissenschaften, Technik und Medizin*, vol. 10, pp. 5–22.

Depman, I. (1956), 'K. F. Gauss i Derptsko-Iur'evskii universitet.' In *Voprosy istorii estestvoznaniia i tekhniki*, vol. 1, pp. 241–245.

Donnert, E. (2007), *Die Universität Dorpat-Jurev 1802–1918*. Frankfurt am Main and others: Lang.

Eelsalu, H. & Herrmann, D. B. (1985), *Johann Heinrich Mädler (1784–1874): Eine dokumentarische Biographie*. Berlin: Akademie Verlag.

[**Fuss, P. H.**] (1853), *Nachricht von der Vollendung der Gradmessung zwischen der Donau und dem Eismeere*. St Petersburg: Kais. Akademie d. Wiss. (Gauss Library 1182).

Ławrynowicz, K. (1995), *Friedrich Wilhelm Bessel 1784–1846*, Vita Mathematica series, vol. 9. Basel: Birkhäuser.

Lumiste, Ü. (1963), 'Predvoskhishchenie formul Frene v sochinenii K. Ė. Senfa.' In *Voprosy istorii fiziko-matematicheskikh nauk*. Moscow, pp. 141–147.

—— (1997), 'Martin Bartels as researcher. His contribution to analytical methods in geometry.' *Historia Mathematica*, vol. 24, no. 1, pp. 46–65.

Mezenin, N. A. (1987), *Laureaty Demidovskikh premii Peterburgskoi Akademii nauk*. Leningrad: Nauka.

Modzalevskii, B. L. (1908), *Spisok chlenov Imperatorskoi Akademii nauk: 1725–1907*. Sanktpeterburg: Tipogr. Imp. Akad. Nauk. Reprint Leipzig, 1971.

Müürsepp, P. (1978), 'Gauss and Tartu University.' *Historia Mathematica*, vol. 5, no. 4, pp. 455–459.

Paucker, M. G. (1813), *De nova explicatione phaenomeni elasticitatis corporum rigidorum*. Dorpat: M. G. Grenzius (Gauss Library 1278).

—— (1819), *Ueber die Anwendung der Methode der kleinsten Quadratsumme auf physikalische Beobachtungen*. Mitau: Steffenhagen. (Gauss Library 1279).

—— (1822), 'Geometrische Verzeichnung des regelmäßigen Siebzehn- und Zweihundertsiebenundfünfzig-Ecks in den Kreis.' In *Jahresverhandlungen der Kurländischen Gesellschaft für Literatur und Kunst [Mitau]*, vol. 2, Mitau: Steffenhagen u. Sohn, pp. 160–219.

—— (1823), *Die ebene Geometrie der graden Linie und des Kreises, oder die Elemente*. Erstes Buch. Königsberg: Unzer. (Gauss Library 19).

Reich, K. & Roussanova, E. (2011), *Gauß und Russland. Gauß' Briefwechsel mit in Russland wirkenden Wissenschaftlern*. Göttingen [In print].

Richelot, F. J. (1832), 'De resolutione algebraica aequationis $x^{257} = 1$, sive de divisione per bisectionem anguli septies repetitam in partes 257 inter se aequales commentatio coronata.' In *Journal für die reine und angewandte Mathematik*, vol. 9, pp. 1–26, 146–161, 209–230, 337–358.

Senff, K. E. (1831), *Theoremata principalia e theoria curvarum et superficierum*. Dorpat: Schünmann. (Gauss Library 114).

Struve, W. (1813), *De geographica positione speculae astronomicae Dorpatensis*. Mitau: J. F. Steffenhagen et filii. (Gauss Library 1370).

—— (1822), *Catalogus 795 stellarum duplicium, ex diversorum astronomorum observationibus congestus in specula Dorpatensi*. Dorpat: J. C. Schünmann. (Gauss Library 1367).

—— (1827), *Catalogus novus stellarum duplicium et multiplicium maxima ex parte in specula universitatis Caesareae Dorpat*. Dorpat: J. C. Schünmann. (Gauss Library 1014).

—— (1837), *Stellarum duplicium et multiplicium mensurae micrometricae: per magnum Fraunhoferi tubum annis a 1824 ad 1837 in specula Dorpatensi institutae; adiecta est synopsis observationum de stellis compositis Dorpati annis 1814 ad 1824 per minora instrumenta perfectarum*. Sankt Peterburg: Kais. Akademie d. Wiss.

—— (1840), 'Additamentum in F. G. W. Struve mensuras micrometricas stellarum duplicium editas anno 1837, exhibens mensuras Dorpati annis 1837 et 1838

institutas. Adjecta est disquisitio de parallaxi annua stellae α Lirae.' In *Mémoires de l'Académie Impériale des Sciences de St.-Pétersbourg, Sciences math. et phys.* vol. (6) 2, no. 4, pp. 337–358. (Gauss Library 1364).

[von Hoff, C. E. A.] (1835), 'Rezension von Friedrich Parrot, Reise zum Ararat, Berlin 1834.' In *Göttingische Gelehrte Anzeigen*, pp. 11–24 (2./3.Stück, 8. Januar), pp. 25–27 (4. Stück, 10. Januar) and p. 744 (74./75. Stück, 14. Mai).