Why did Karl Ernst von Baer travel to Italy in 1845–1846?

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• Every Baltic German landlord and literate dreamed of travelling to Italy in the 19th century, or even better, to live there during winters.

• In the Nordic latitudes Italy was associated with lots of sunshine and dry air which created good conditions for curing tuberculosis and soothing symptoms of other diseases.

• Furthermore, in Italy the cultural monuments could be seen the Baltic Germans had longingly read about.

• Baer made his first visit to Italy as a professor of the University of Königsberg in 1820s. His first impressions of the country are unknown.
Baer’s (1792–1876) short life chronology

• 1807–1810 studied at Reval/Tallinn Cathedral School
• 1810–1814 studied medicine at the University of Dorpat/Tartu
• 1814–1817 continued his studies at the universities of Vienna, Würzburg and Berlin
• 1817–1834 full professor of zoology and comparative anatomy at the University of Königsberg
• 1835–1862 full member of the St Petersburg Academy of Sciences in zoology and comparative anatomy
• Since 1862 honorary member of the Academy
• 1867–1876 lived in Dorpat
Main scientific interests

- Baer had a wide range of scholarly interests, and was active as scientist mainly on these fields as:
  - Comparative anatomy
  - Physical anthropology
  - Physical geography
  - Applied science

Baer’s craniological collection in the Russian Academy of Sciences (Kunstkamera)
While being in Königsberg from 1817 to 1834, Baer’s main interest lied in solving the mysteries of evolution of all animal classes rather than in travelling.

In 1827, he discovered the mammalian ovum and completed research *Ovi Mammalium et Hominis genesi* which he dedicated to St Petersburg’s Academy of Sciences. In April 1828, Baer was elected a full member of the Academy.

Half a year later, in September 1828, Baer introduced his discovery of the egg of mammals at the Meeting of German Natural Scientists in Berlin. His performance failed to impress the audience and he didn’t get the feedback he expected. As a sensitive man, he took it as an offence.

While in Berlin, he received a message from Russia stating that Nicolas I had awarded him an annual salary (meant for duties as an ordinary member of St Petersburg’s Academy of Sciences).
Baer and embryology

- Baer’s indignation was the main reason he accepted the offer from St Petersburg.
- To prevent him from leaving, however, it was finally decided in the Council of the University of Königsberg to build him a Zoological Museum.
- Furthermore, Baer was granted unlimited funds to carry on with his studies on the embryological development of mammals.
- As a result, his interlude in St Petersburg only lasted for five months in 1830.
- Back in Königsberg, Baer proceeded with his research but didn’t gain much success as the irregularities in the development of pig and sheep embryos he mostly studied were too great to allow any certain results.

Baer had particularly hard time understanding the development of the cardiovascular system at the embryonic level.

He drew many schemes but didn’t publish any of them.
This failure ruined him emotionally. As he wrote in his autobiography: “‘Nature’s Laws of Formation will be discovered,’” I pleaded with myself in an Epicurean or Mephistophelean vein, “whether by you or by another, whether this year or the next is really of no importance and it is plain foolishness to sacrifice your own life’s enjoyment which nobody will ever return to you.””
Baer and embryology

• Baer fell into an emotional crisis deep enough to discourage him from publishing the second volume of his "Entwicklungsgeschichte der Thiere", the first volume of which had become very popular after it was published in 1828

• The second volume of the "Entwicklungsgeschichte" was published by Borntraeger Brothers in 1837 and it was a mere collection of Baer’s materials they had managed to gather; it had no introduction nor summary and it also lacked an explanation of figures
In 1834, Baer decided to leave Königsberg for good and to continue his embryological research in St Petersburg’s Academy of Science.

He didn’t have much time for that, though, as he:

- led the foreign literature department of the Academy’s library
- undertook craniological research
- collected systematically weather observations data from all parts of the Russian empire
- collected data on geographical distribution of permafrost in Siberia (and in the world)
- led preparations for several geographical expeditions to explore the interior and peripheral areas of the Russian empire (e.g., the expedition of Alexander Theodor von Middendorff to northern and eastern Siberia in 1842–1845)

Map of distribution of permafrost in Siberia (1843) compiled by Baer
The year 1845 in Baer’s life

• Baer didn’t risk to apply for permission to travel abroad in 1835–1844 as the journey needed to be approved by the Emperor.

• Baer knew, however, that the Emperor wasn’t particularly happy that he had neglected his obligation to work in St Petersburg between 1830–1834.

• Thus, he travelled within the Empire to Novaya Zemlya and the Russian Lapland (in 1837 and 1840).

Baer in Novaya Zemlya
(Author: Röder)
The year 1845

- New perspectives opened up in 1845:
  - Alexander Theodor von Middendorff was expected to return from his expedition to Siberia in March and was welcomed in the capital as a national hero.
  - Baer decided to seize the opportunity and initiated the establishment of the Russian Geographical Society at the beginning of April 1845. It took him longer than he expected and he left Russia before the society was officially created, leaving his friends disappointed about his unfinished job.
After spending ten years in Russia, Baer planned February 1845 to visit Berlin, Breslau, Vienna and London in this summer.

He aimed to study the craniological collections kept in these cities, and he got a relevant permission from the Academy.

Irrespective of Baer’s plan, the Grand Duchess of Russia, Elena Pavlovna planned to travel to Italy in the same summer and wanted Baer – the tutor of her children – to join her journey.
• This proposal changed Baer’s plans. First, it was impossible to say “no” to Grand Duchess. Secondly, he was actually happy to join her entourage.

• But he needed to come up with a new research topic the Academy could approve. Moreover, he needed to explain his change of plans and to reason the new destination for the Academy without connecting it anyhow with the travelling plans of the Grand Duchess.

• Baer informed the Academy that he would go to Italy in order to study the embryology of *Echinus*.

• This was a smart move – Baer’s previous work on embryology was widely known.
**Baer travels to Italy**

- Baer left St Petersburg at the beginning of June, planning to spend 5 months in Italy. He arrived in Genova in September 1845. Due to belated departure of the Grand Duchess back to St Petersburg, it was only the second week of October he could embark on his embryological research.

- He worked in Genova first, then in Trieste, and was fascinated about the embryology as once in Königsberg. He didn’t return to Russia before January 1846, failing to follow the timeframe set for his trip by the Academy.

Some examples of Baer’s embryological research in Italy
Baer in Italy in 1846

- No sanctions followed, though, and Baer was given a permission to return to Italy in 1846 in order to finish his promising research.
- The role of the Grand Duchess Elena Pavlovna in supporting the new trip cannot be entirely ruled out.

Nuclear migration in the fertilized egg of sea urchin (upper row, from left to right) and the following stages of division (Raineri, Tammiksaar 2103)
Baer in Italy in 1846

• This time, Baer travelled to Italy together with scientific illustrator of the Academy of Sciences Wilhelm Georg Pape – an Baltic German whose task was to draw the different species of benthic animals Baer collected from the Mediterranean Sea

• Baer went to Venice, and then to Trieste, where he had recently met Heinrich Koch, a German merchant who was interested in Adriatic fauna

• During their journey, Pape drew more than 160 pictures of benthic animals and the development of their embryos

• But like in 1830s, Baer’s embryological research in Trieste remained incomplete and the results of his observations were controversial
Baer and embryology after 1846

- As a result, Baer discontinued his research on embryology of sea urchins as he had done once before, and published only one short study of his Mediterranean expeditions in the Bulletin of St Petersburg’s Academy of Sciences in 1847.
- It doesn’t mean, however, that he didn’t follow the latest developments in the field of embryology.
- Materials from his expeditions to Lake Peipus (1851–1852) and to the Caspian Sea (1853–1856) give enough evidence of his enduring interest in embryology: he artificially inseminated fish and watched the results with interest.

Winter fishing at Lake Peipus (1852)
Summary

• Baer undertook the trip to the Mediterranean area at the request of Grand Duchess Elena Pavlovna
• The trip, what was initially planned as a vacation, gave him an impetus for continuing the embryological research he had interrupted in the 1830s
• Observation of the embryonic development of *Echinus* fascinated him and gave him a new hope to discover the Nature’s Laws of Formation he had long been dreaming of
• Baer’s dream didn’t come true, though, as his observations were short-term and far too unsystematic for achieving the goal
• Baer’s reaction to his failure in the field of embryology was characteristic for his impatient nature – he discarded the topic, didn’t publish the results and refocused on other research themes he had interest in, such as the physical anthropology, physical geography and applied science.