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*Acta Universitatis Carolinae. Mathematica et Physica*, Vol. 46 (2005), No. Suppl, 185--191

Persistent URL: <http://dml.cz/dmlcz/143834>

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## Father David's Interaction with Franz Xaver von Zach

PETER BROSCHE

Bonn

*Received 20. October 2004*

Last week in Budapest we celebrated the 250<sup>th</sup> anniversary of the birthday of Franz Xaver von Zach (1754–1832) who was born in Pest. By the foundation of a first astronomical and geodetic journal and by other activities he represented a kind of information centre for our science, especially around 1800. Since his father<sup>1</sup> was a native of Olmütz (Olomouc) and since Zach reported of course also on Bohemia, it seems appropriate to remember him here briefly reviewing his strongest interaction with a Bohemian scientist. This was certainly the one with father Alois David (1757–1836), a Praemonstratensean monk in the convent at Tepl, who by the time became the leading astronomer of Bohemia: from 1800 until his death, he was the director of the Prague observatory. A painted portrait of David in the chapter-house of Tepl needs restoration, but a graphical version of it shows him also holding a sextant (Fig. 1).

Zach had a reputation in practical astronomy (then including astrogeodesy) and a number of young scientists went to the Seeberg observatory near Gotha in order to achieve and to improve abilities in this field. This was also known to David who appeared for the first time in the astronomical literature during the eighties of the 18<sup>th</sup> century. He used the opportunity of a cure of Zach in Sept 1789 in Karlsbad<sup>2</sup> (Karlovy Vary) to meet him there personally. In fact, he used it so thoroughly that

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Observ. atorium Hoher List, Sternwarte der Universität Bonn, D-54550 Daun, Germany

<sup>1</sup>Zachs father belonged probably to the German-speaking population, since Zach himself tested later on a multilingual Italian professor in many languages (including Hungarian and Rumanian [then Walachian]) but explicitly not in Czech (then Bohemian): P. Brosche (2001) 233. The grandfather was keeper of a coffee-house, a brandnew profession at this time.

<sup>2</sup>The famous spas must have been a special administrative zone within Bohemia. Zach did not need a passport (id est, visum) in order to visit Karlsbad, but he would have needed one to accompany his Viennese visitor Bürg even only to Prague (Brosche 2001, p. 25).



Fig. 1 Father David holding a sextant.

he even made “lecture notes” after each conversation. And despite of his eye inflammation, Zach executed also some practical demonstrations and determined with the coordinates of Karlsbad the first Bohemian ones outside of Prague (Zach 1797, ne note 3). Around this time, Zach convinced a number of colleagues – including father David – that astrogeodetic measurement with small, transportable

instruments had a great efficiency. The essential instruments were a sextant and a chronometer. The first was always called Hadleyan sextant by Zach according to his English inventor. For measurements on the solid Earth one needed also an artificial horizon, and Zach invested much effort to optimize it.

All these items can be identified on a small medal which Zach's friends from Leipzig had coined for him in 1796. Zach had sent one to David, noting that he belonged also the the 'Hadleyan society'. It is the only specimen which has survived – to our knowledge – and is kept by the Národní muzeum in Praha. There it was detected by Tomáš Kleisner (Fig. 2).



Fig. 2 The medal for Zach  
(© Národní muzeum, Praha).

In the autumn of 1801, David visited Zach at his Seeberg observatory and made again careful notes regarding details of the instruments. Since the meeting of Zach and David at Karlsbad in 1789, an intense correspondence started, of which about 60 letters from Zach to David are preserved in the archives of the Prague observatory. They were edited in 1938 by Otto Seydl. The letters of David have not survived in original form, but Zach published excerpts in Bode's yearbook and in his own journals, as well as he refereed David's publications<sup>3</sup>.

The topics of the letters cover all fields of classical astronomy but with a focus on the determination of longitude and latitude of places like Dresden and Prague (Figs. 3, 4). The crucial point or the weakest link of the chain was the time transfer between two places. Consequently, the two correspondents informed each other on astronomical observations like eclipses of Jupiter moons, and they arranged and observed terrestrial transfers by powder flashes from mountains. All this started well and could have led to a considerable improvement of the geodetic situation in Central Europe, because Zach was going to perform a first German measurement of a degree. But the history decided otherwise. The Napoleonic wars swept over Saxony, culminating in the battle of Jena and Auerstedt in October 1806. At the beginning of 1807, Zach wrote to Oriani in Milano: "La Mesure de Degré, mon cher ami, comme vous voyez, s'en est allé à tout le Diable. ... Le théâtre de mes triangles, est devenu un théâtre ensanglanté, joncé de cadavres". Under these circumstances the widow of the observatory's founder, duke Ernst II., decided to leave Germany and to settle in southern France. Zach, meanwhile her master of the court, went with her and tried to continue his activities under more advantageous conditions.

It seems not surprising then that the last preserved letter of Zach to David dates from 1805 and was written on a triangle station in a spirit of hope for common success, especially for the connection of Bohemia with Zach's geodetic net. But with regard of France, he writes already "Der jetzige französ[ische] Kaiser will nur Bayonetten, Kanonen und Schiffe". Zach's last letter which David noted in his diary but which is lost, dates from 1806, May 24 (Seydl 1938, p. 33). Not only was any reason for hope wiped out; even more, for the coming years, Zach and David lived in countries hostile to each other and consequently difficult to bridge with letters.

Their farsighted intentions had failed but their smaller achievements went into the big river of knowledge, and thereby they contributed to the development of astronomy and geodesy in Bohemia.

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<sup>3</sup>Beyond those listed by Seydl 1938, p. 196f. also F. X. von Zach: Prag [review of: Geographische Breite und Länge von Schlukenau an der nördlichen Gränze Böhmens mit Oberlausitz, aus astronomischen Beobachtungen bestimmt von Alois David. Prag 1797] Nachrichten von gelehrten Sachen, herausgegeben von der Akademie nützl. Wissenschaften zu Erfurt. 37. Stück, vom 26. Junius 1797, p. 297ff.

Geographische  
Breite und Länge von Benatek,

wo

T y c h o B r a h e

vor 203 Jahren beobachtet,

aus

astronomischen Beobachtungen

b e s t i m m t

o n

M l o y s D a v i d,

Reg. Kanonikus des Stiftes Tepl, der freyen Künste und Weltweisheit Doktor an der Karlsferdinandischen Universität, Astronom, und Professor der praktischen Sternkunde, der k. Prager Sternwarte Vorsteher, der gelehrten k. Gesellschaft der Wissenschaften, wie auch der k. ökonomischen patriotischen Gesellschaft in Böhmen ordentlichen Mitgliede.



P r a g,

gedruckt bey Haase und Widtmann.

1 8 0 2.

Fig. 3 David on the position of Brahe's observatory.

# Geographische Ortsbestimmungen

von

Manetin und Kalez,  
Pilsen und Chotieschau;

sammt

Vorschlägen, die Gestalt der Erde aus Längenbestimmungen durch Blickfeuer und Sternbedeckungen zu berechnen;

herausgegeben

von

M l o y s D a v i d,

Doktor der Philosophie, k. k. Astronom, und Professor der praktischen Astronomie, Vorsteher der k. Prager Sternwarte, regulirter Kanonikus des Stiffts Tepl, der Zeit Sekretär der k. böhmischen Gesellschaft der Wissenschaften, wie auch der k. patriotisch-ökonomischen Gesellschaft in Böhmen ordentliches Mitglied, korrespondirendes Mitglied, der k. Akademie der Wissenschaften zu München, der Gesellschaft zur Beförderung der Naturkunde und Industrie Schlesiens.

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Für die Abhandlungen der k. böhm. Gesellschaft der  
Wissenschaften.

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Prag 1811,  
gedruckt bey Gottlieb Haase,  
kön. böhm. känd. Buchdrucker.

Fig. 4 David on the position of West Bohemian places.

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