

INLAND NAVIGATION  
AND ECONOMIC DEVELOPMENT  
IN NINETEENTH-CENTURY  
EUROPE

EDITED BY  
ANDREAS KUNZ  
AND  
JOHN ARMSTRONG



VERLAG PHILIPP VON ZABERN · MAINZ

1995

## CONTENTS

List of tables and figures .....	VII
List of maps.....	XI
List of abbreviations .....	XII
Introduction.....	1
<i>1. National studies and international comparisons.....</i>	<i>11</i>
1. The role of canals in British industrialization <i>Gerald Crompton.....</i>	<i>13</i>
Summaries.....	32
2. Belgian inland shipping, 1831–1939: An estimate of total output <i>Bart Van der Herten.....</i>	<i>35</i>
Summaries.....	45
3. The economic performance of inland navigation in Germany, 1835–1935: A reassessment of traffic flows <i>Andreas Kunz .....</i>	<i>47</i>
Summaries.....	77
4. Inland navigation and economic growth in Sweden in the nineteenth century <i>Olle Krantz.....</i>	<i>79</i>
Summaries.....	102
5. Trade and navigation on the lower Danube: Romania and Bulgaria, 1880–1912 <i>Alexandre Kostov.....</i>	<i>105</i>
Summaries.....	118
6. Statistical sources relating to inland navigation in the Czech lands and Cisleithania in the nineteenth century <i>Milan Hlavačka.....</i>	<i>121</i>
Summaries.....	128
7. Europe's Cinderella: Inland navigation in nineteenth-century Spain <i>Antonio Gomez-Mendoza.....</i>	<i>131</i>
Summaries.....	143
8. Inland navigation in Italy in the nineteenth century <i>Andrea Giuntini.....</i>	<i>147</i>
Summaries.....	155

9.	Inland navigation, coastal trade and trans-oceanic shipping: A plea for cooperative studies <i>Lars U. Scholl</i> .....	159
	Summaries.....	162
II.	<i>Regional comparisons and local studies</i> .....	165
10.	The regional dimension in the historical analysis of transport flows <i>Frank B. Tipton</i> .....	167
	Summaries.....	179
11.	The economic performance of inland navigation in France: The lower Seine and the Paris – Lens route in a comparative perspective, 1840–1914 <i>Michèle Merger</i> .....	181
	Summaries.....	210
12.	Waterways and the Dutch economy in the nineteenth century <i>A. Frits J. Niemeijer</i> .....	213
	Summaries.....	235
13.	The economic performance of inland navigation in the Dutch province of Groningen in the nineteenth century <i>Marcel Clement</i> .....	237
	Summaries.....	258
14.	Fuelling the local economy: The Fenland coal trade, 1760–1850 <i>Fiona Wood</i> .....	261
	Summaries.....	275
15.	Shipping on the river Stör: Navigation on a regional waterway in Schleswig-Holstein in the nineteenth century <i>Ortwin Pelc</i> .....	277
	Summaries.....	287
16.	The resumption of British coal exports through Hamburg, 1919–1925: Problems and perspectives <i>Peter Lyth</i> .....	291
	Summaries.....	304
17.	Inland navigation and the local economy <i>John Armstrong</i> .....	307
	Summaries.....	310
	Select bibliography.....	313
	Contributors.....	319
	General Index.....	323

## LIST OF TABLES AND FIGURES

### Chapter 2

<i>Figure 1:</i> Traffic on Belgian waterways, 1831–1913 (millions of ton-km).....	41
<i>Figure 2:</i> Traffic on Belgian waterways, 1831–1939 (millions of ton-km).....	42
<i>Figure 3:</i> Traffic on Belgian waterways, 1831–1939, semi-logarithmic scale (millions of ton-km) .....	43
<i>Figure 4:</i> Growth of the traffic on Belgian inland waterways, 1831–1939 (percentage, 3 year moving average) .....	44

### Chapter 3

<i>Table 1:</i> Performance of German waterways by region, 1835–1935 (millions of ton-km) .....	49
<i>Table 2:</i> Performance of waterways, railways and coal production in Germany, 1835–1913 .....	51
<i>Figure 1a:</i> Performance of German waterways, 1835–1935 (milliards of ton-km).....	53
<i>Figure 1b:</i> Performance of German waterways, 1835–1935 (millions of ton-km, semi-logarithmic scale).....	53
<i>Figure 2:</i> Waterways, railways, and coal production in Germany, 1835–1910 (semi-logarithmic scale).....	54
<i>Figure 3a:</i> Performance of the Rhine region, 1835–1935 (milliards of ton-km).....	57
<i>Figure 3b:</i> Performance of the Rhine region, 1835–1935 (millions of ton-km, semi-logarithmic scale).....	57
<i>Figure 4a:</i> Performance of the Elbe region, 1835–1935 (milliards of ton-km).....	59
<i>Figure 4b:</i> Performance of the Elbe region, 1835–1935 (millions of ton-km, semi-logarithmic scale).....	59
<i>Figure 5a:</i> Performance of the Berlin region, 1835–1935 (millions of ton-km) .....	61
<i>Figure 5b:</i> Performance of the Berlin region, 1835–1935 (millions of ton-km, semi-logarithmic scale).....	61
<i>Figure 6a:</i> Performance of the Oder region, 1835–1935 (millions of ton-km) .....	63
<i>Figure 6b:</i> Performance of the Oder region, 1835–1935 (millions of ton-km, semi-logarithmic scale).....	63
<i>Figure 7a:</i> Performance of East Prussian waterways, 1835–1935 (millions of ton-km) .....	65

<i>Figure 7b</i> : Performance of East Prussian waterways, 1835–1935 (millions of ton-km, semi-logarithmic scale).....	65
<i>Figure 8a</i> : Performance of the Ems region, 1835–1935 (millions of ton-km) .....	67
<i>Figure 8b</i> : Performance of the Ems region, 1835–1935 (millions of ton-km, semi-logarithmic scale).....	67
<i>Figure 9a</i> : Performance of the Weser region, 1835–1935 (millions of ton-km) .....	69
<i>Figure 9b</i> : Performance of the Weser region, 1835–1935 (millions of ton-km, semi-logarithmic scale).....	69
<i>Figure 10a</i> : Performance of the Danube region, 1835–1935 (millions of ton-km) .....	71
<i>Figure 10b</i> : Performance of the Danube region, 1835–1935 (millions of ton-km, semi-logarithmic scale).....	71
<i>Table 3</i> : Performance of new canals in Germany, 1899–1937 (millions of ton-km) .....	72
<i>Figure 11</i> : Performance of western canals, 1899–1937 (millions of ton-km, semi-logarithmic scale).....	73

## Chapter 4

<i>Figure 1</i> : Swedish GDP per capita, constant prices, 1800–1910 .....	80
<i>Table 1</i> : Annual percentage growth of GDP per capita, total GDP and industrial production, Sweden, 1800–1910. Constant prices.....	80
<i>Figure 2</i> : Total transport in relation to total goods production, constant prices, 1800–1910.....	81
<i>Table 2</i> : Transport output in Sweden, 1801–1910. Constant prices (price level of 1869/71). Per cent .....	82
<i>Table 3</i> : Expansion of total Swedish railway length (kilometres), 1856–1910 .....	82
<i>Figure 3</i> : Total domestic transport and inland navigation traffic in constant prices, 1800–1910 .....	84
<i>Figure 4</i> : Inland navigation in relation to total domestic transport in constant prices, 1800–1910 .....	84
<i>Figure 5</i> : Inland navigation traffic in relation to a) industrial production, b) total commodity production (constant prices, seventeen year moving averages), 1800–1910.....	85
<i>Table 4</i> : Commodity groups in inland navigation, 1873, 1893 and 1913. Per cent of total quantity (tons) .....	86
<i>Table 5</i> : Annual average compound growth rates of real GDP per capita, 1873–1893 and 1893–1913 .....	89
<i>Table 6</i> : Waterway construction projects in Sweden, 1800–1910.....	93
<i>Table 7</i> : Freight traffic: total Swedish domestic shipping and the largest Swedish canals, 1873–1913.....	99

## Chapter 5

<i>Table 1:</i> Danubian ports and Romanian imports and exports, 1883–1912.....	110
<i>Table 2:</i> Danubian ports and Bulgarian imports, 1888–1912.....	111
<i>Table 3:</i> Ship movements in and out of Romanian ports, 1904–1912 .....	113
<i>Table 4a:</i> Ship movements in Bulgarian ports on the Danube, 1895–1912 .....	114
<i>Table 4b:</i> Ship movements in and out of Bulgarian ports, 1895–1912.....	115
<i>Table 5:</i> Cargoes on vessels in Bulgarian ports, 1901–1911 .....	116
<i>Table 6:</i> Transshipping of non-Romanian cereals in Braila, Galati and Sulina, 1906–1912 .....	117

## Chapter 7

<i>Table 1:</i> Freight traffic on the Canal of Castile (thousand tons and percentage).....	141
--	-----

## Chapter 11

<i>Table 1:</i> Traffic on the Seine in 1868 (thousand tons).....	190
<i>Table 2:</i> Traffic on the route from Paris to Mons, 1883–1913 .....	199
<i>Table 3:</i> Average tonnage related to the entire distance (thousand tons) .....	200
<i>Table 4:</i> Boats counted in a census of the northern network .....	203
<i>Table 5:</i> Distribution of traffic on the Lower Seine (thousand tons and percentage).....	205
<i>Table 6:</i> Coal reaching the port of Paris by waterway, 1883–1913 .....	206
<i>Table 7:</i> Average tonnage on the Rouen–Mantes railway line and on the Seine from Rouen to Conflans (thousand tons).....	207
<i>Table 8:</i> Freight on the route Paris–Rouen, 1867–1910 .....	209

## Chapter 12

<i>Figure 1:</i> The Central-Holland region .....	216
<i>Figure 2:</i> The Overijssel region.....	218
<i>Figure 3:</i> The Friesland region.....	219
<i>Table 1:</i> An outline of economic development in Alphen aan den Rijn, Central-Holland, based on factory labour, 1850–1926 .....	226
<i>Table 2:</i> Developments in the textile industry in Almelo and Enschede, based on use of steam-power, 1850–1920.....	229
<i>Table 3:</i> Developments in Frisian industry, mainly showing spatial dispersion of steam-engines, 1850–1910.....	231

## Chapter 13

<i>Figure 1:</i> The position of the province of Groningen in the Netherlands .....	238
<i>Figure 2:</i> Investment in inland waterways and the diffusion curve of the length of the network, 1840–1915 (million guilders and as a proportion of its final length).....	239
<i>Figure 3:</i> Inland waterways around 1800 .....	240

<i>Figure 4: Inland waterways around 1915</i> .....	240
<i>Figure 5: Output of inland navigation in Groningen, 1860–1914</i> (millions of ton-km of freight).....	242
<i>Figure 6: Inland navigation on the Hoendiep and Winschorterdiep canals,</i> 1860–1914 (millions of tons loading capacity).....	244
<i>Figure 7: Index of traffic intensity of inland navigation in Groningen,</i> 1790–1860 (1860=100).....	244
<i>Table 1: Output of inland navigation in the province of Groningen,</i> 1800–1913 (millions of ton-km of freight and average annual compound growth rates).....	246
<i>Figure 8: The pattern of inland navigation in Groningen, 1910</i> (in 100,000 tons loading capacity).....	247
<i>Table 2: Composition of freight transport passing locks in the province of</i> Groningen (per cent) .....	248
<i>Table 3: Production of barges in shipyards in Hoogezand, 1870–1907</i> (number of vessels launched) .....	250
<i>Table 4: The distribution of employment in the transport sector,</i> 1849–1909 (per cent).....	251
<i>Table 5: The average loading capacity of inland vessels on some</i> waterways in Groningen, 1860–1910 (10-yearly average, tons in cubic metres).....	253
<i>Table 6: The share of each subsystem in total output of passenger transport</i> in Groningen, 1790–1914 (millions of ton-km, share in per cent) .....	254
<i>Table 7: The share of each subsystem in total output of freight transport</i> in Groningen, 1790–1914 (millions of ton-km, share in per cent) .....	254
<i>Table 8: Data on inland waterways in the province of Groningen,</i> 1800–1860.....	257

#### Chapter 14

<i>Table 1: Total imports of coal to King's Lynn, 1751–1851</i> (chaldrons).....	266
---	-----

#### Chapter 15

<i>Table 1: Ships registered at Itzehoe customs, 1843–1848</i> .....	280
<i>Table 2: Ships in the Itzehoe harbour, 1881–1848</i> .....	284

#### Chapter 16

<i>Table 1: English coal and coke arriving in Hamburg by sea, monthly</i> tonnage (not including Altona and Harburg).....	293
--	-----

## LIST OF MAPS\*

Belgian inland waterways, 1870–1880.....	37
German waterways by regions in 1916.....	55
Loading and unloading of goods, selected German ports in 1913.....	75
Sweden .....	90
Central Sweden with the canal system.....	91
The waterway system connected to Räfte railway station .....	97
Romania and Bulgaria in 1912.....	107
Navigation and rafting on Bohemian rivers at the beginning of the 1880s.....	125
Waterways in northern Italy.....	149
Northern waterways in France c. 1900.....	183
Main waterways in three regions in the Netherlands, 1800–1900 .....	215
The network of navigable rivers in the hinterland of King's Lynn from c. 1750.....	263
The river Stör and its surroundings c. 1890 .....	279

\* The editors gratefully acknowledge the assistance received in the preparation of the maps, in particular by John Williamson (London) for the maps appearing on pp. 37, 90, 91, 97, 107, 149, and by Joachim Robert Moeschl (Berlin) for the map appearing on p. 279.