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Page 1 of 4



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**[Rotterdam Section of Maas River Map] Kaart van de Beneden rivier de Maas en de
Merwede van de Noord Zee tot Hardinksveld**

Printed River Map in the Netherlands, 1725-1795. *Imago Mundi*, Vol 52, pp 66-68 (2000):

A little known category of Dutch cartography is the 18th century printed river map. These maps represent the main output of the Hydraulic Department of Holland, an institution founded by the provincial council of Holland in 1726 for the specific purpose of designing structural solutions for the key problems of the river landscape. For reasons of state security, these detailed maps were produced in limited editions of 40 to 50 copies each for the exclusive use of a small group of decision makers and engineers linked to the Hydraulic Department. 1 The Hydraulic Department of Holland is considered the forerunner of the modern Department of Public Works, established in 1798, shortly after the political revolution which ended the federal Dutch Republic. . . .

The basis of river cartography in Holland was laid down by the surveyor Nicolaas Cruquius (1678-1754). By linking cartography with quantitative data, a map could be made to show both distribution and process. Such maps would function not as mere representations-static spatial images-but as powerful visual documents providing precise information about the changing structure and form of topographical elements. . . .

In 1725 Cruquius assembled his scientific interests in a plan for the hydraulic improvement of the Dutch river system. In this plan, Cruquius explained for the first time the problems of Dutch rivers on a national level and offered a comprehensive solution. He suggested a dual policy. First, on the administrative level, both the national and provincial authorities should take control of the river beds and strive, in mutual co-operation, towards a consistent approach to the main problems of flood control and the maintenance of river flow. Second, on the practical level, Cruquius proposed a general programme for mapping the river landscape, based on the systematic analysis of river beds, river channels and river embankments. Cruquius's plan reflected the idea that maps based on scientific hydrographical research could make an important contribution to the problem of finding ways of protecting Holland from flood and, at the same time, could ensure the efficient functioning of the rivers for shipping.

Melchior Bolstra (1703-1776) was a Dutch surveyor who worked on several of major river surveys in the mid-18th Century. As noted by Paul Van Den Brink, pp 72-75 (2000):

Bolstra succeeded Cornelis Velsen in 1731 as surveyor for the Hoogheemraadschap of Rijnland. At the insistence of Nicolaas Cruquius and others, between 1738 and 1745, Bolstra had produced a map in six sheets of the whole basin of the Meuse (Maas River). This printed map on a scale of about 1:20,000¹⁶ was accompanied by a manuscript map on a scale of about 1:10,000. The outstanding characteristic of Bolstra's printed map is its detailing of river-bed topography. Financial constraints, however, meant the



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adjacent land, that lying beyond the river banks and dikes, is shown in outline only. Like Cruquius, Bolstra also conducted an intensive field survey, but instead of displaying the results on a separate sheet as Cruquius had done, he incorporated the graphs and profiles into the map itself. In all other aspects of style and design, however, Bolstra's map reflects Cruquius's concepts.

Bolstra also applied his and Cruquius's principles of combining careful field survey and quantitative research to other rivers in Holland and elsewhere in the Dutch Republic. In 1740, a dike breach near Spyk, below the city of Emmerich in the territory of Cleve, caused by a sudden discharge of water into the delta area which was far beyond the capacity of the river channels there, resulted in a series of floods. Water from the river Lek inundated vast expanses of the province of Holland, causing extensive damage. Because the dike breach near Spyk was not repaired, floods recurred during subsequent years. From 1740 onwards, urged by the Rijnland authorities who were responsible for the control of water affecting urban centres in the province of Holland north of the river Lek, the Hydraulic Department of Holland extended its attention to this part of the river system.

As in the case of the Merwede, views on how to deal with the problems were contradictory. Disagreement, however, did not hinder the production of a seven-sheet map of the river Lek, inspired by Velsen and commissioned by the Hydraulic Department. Bolstra undertook his survey between 1750 and 1754, but because of administrative problems, the map was published only in 1765. Once again, he followed the principles introduced by Cruquius, and his map presents an accurate representation of the river bed and the other topographical elements which contribute to an understanding of the fluvial environment. The large scale of the manuscript map (c. 1:10,000) added much to its clarity. Although Bolstra had amassed data concerning the depth of the river and the shape of the river bed, 'lack of time' did not allow him to develop a system of contour lines. Likewise, the results of his research into river flow remained in manuscript and were never used, for reasons we do not now know, in the process of map editing.

Following the dictate of the Rijnland Hoogheemraadschap, the Hydraulic Department-now under Johan Lulofs-in general adopted a two-tier policy. On a practical level, the department developed various solutions for channeling the Lek's water in safe directions. One suggestion, for example, was the diversion of water from the Lek south to the river Linge whenever high water levels occurred. The Linge would thus carry the Lek's surplus into the Merwede and onwards into the Biesbosch. Although, like so many other projects, this was never put into effect, Bolstra mapped the river Linge in 1754, again using the scale of c. 1:10,000. The completion of this map meant that, for the first time, a printed map on a standard scale was available for every river in Holland.

There are few surviving examples of the complete 6 sheet map, making single map sections highly



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desirable for collectors.

Detailed Condition:

1 sheet of a 6 sheet map.