



Alfons Fransen, ***Dijk onder spanning. De ecologische, politieke en financiële geschiedenis van de Diemerdijk bij Amsterdam, 1591-1864*** (Waterstaat, cultuur en geschiedenis 1; Hilversum: Verloren, 2011, 404 pp., ISBN 978 90 8704 191 5).

For more than six hundred years, the Diemerdijk, extending eastward from Amsterdam, provided protection to tens of thousands of hectares of low-lying peat land from saltwater inundation by the Zuiderzee. The total length of this dike was around 30 kilometers, 12 of which comprised the section from Amsterdam eastward to the mouth of the Vecht River, with the remainder extending southward along both banks of the Vecht, up to and including the Hinderdam, and then further eastward again along the south side of the Naardermeer (Naarden Lake). In *Dijk onder spanning*, Alfons Fransen examined the many difficulties affecting the maintenance of this critical sea dike between the late sixteenth and mid-nineteenth centuries, a period that saw not only massive storm surges but also the disruptions of warfare. The Diemerdijk's role as a sea dike came to an end only in 1932 with the completion of the Afsluitdijk, which closed the open connection between the North Sea and Zuiderzee, transforming the latter into a freshwater lake, the IJsselmeer (IJssel Lake).

Fransen carried out his work in a deliberate fashion. In chapter 1, he clearly laid out his objectives: to examine how the maintenance of the Diemerdijk was financed during the period 1591 and 1864 and to explain how financing was accomplished within the ecological, economic, political, and technological contexts of the period. In chapter 2, he reviewed the history of the Diemerdijk before 1590. The Diemerdijk initially was created in response to the transformation of a large complex of freshwater fens, lakes, and pools, known since antiquity as the Almere, into a large and expanding inland sea during the late-twelfth and thirteenth centuries: a series of storm surges eroded natural barriers far to the north, allowing salt water from the North Sea to penetrate the freshwater Almere basin, creating the Southern Sea (Zuiderzee). In its original form, constructed before 1300, the Diemerdijk was little more than a low, earthen embankment, but as further storminess damaged the soft southern shore of the Zuiderzee during the fourteenth and fifteenth centuries, the dike gradually was transformed into an actual sea dike. Indeed, by the beginning of the period of this study, parts of it were clad entirely in wood, especially where its fore-shore had been washed away: long poles or pilings were driven into the underground at a slightly slanted angle, lashed together with considerable amounts of

wood and iron, and buttressed by and anchored with timbers into an earthen bank behind. In chapters 3, 5, and 7, Fransen examined the maintenance and financing of the dike through three long periods (1591-1672, 1678-1732, 1744-1864) interspersed by chapters 4 and 6 in which he looked more closely at periods of great restoration activity, around 1675 and 1735. In chapter 8, he discussed the introduction of new water management regulations in 1864 that fundamentally changed the dike's financing, and he offered a series of conclusions in chapter 9. The volume ends with a series of seven appendices, a glossary, a note on weights and measures, an extensive bibliography, both Dutch and English summaries, and an index. Interspersed throughout the text are numerous tables and illustrations, many in colour.

As Fransen made clear, the Diemerdijk often found itself under pressure or stress (*spanning*) over its long history, but especially so between 1591 and 1864. Such stress came from various quarters. Ecological stress appeared in the form of rising storm-surge levels in the Zuiderzee as well as the slow but persistent sinking of the drained and settled peat soils behind the dike, significantly increasing flood potential, but also in the arrival around 1730 of the ship worm (*paalworm* or *Teredo navalis*) which, by boring into the wooden pilings reinforcing parts of the Diemerdijk, threatened to render those parts useless. However, it is one of Fransen's most important conclusions that the effects of ecological stress were compounded by political and financial considerations and not by a lack of knowledge or technical ability. By the end of the Middle Ages, long-standing patterns of maintenance already were firmly in place. Those living immediately along the Diemerdijk, known as the *dijkplichtigen*, were responsible for its normal maintenance, with oversight and inspection of their work divided between the administrations of the towns of Weesp and Muiden. Because the dike lay almost entirely within the territory of Holland, nearly all *dijkplichtigen* were Hollanders. However, a much larger group, known as the *waalplichtigen*, was protected by the dike and as such was responsible for repairing any breach or *waal* in the dike, and the Diemerdijk Water Board (Hoogheemraadschap van de Diemerdijk) oversaw and inspected the work of the *waalplichtigen* and also exercised a secondary inspection right over the normal maintenance of the dike. The *waalplichtigen*, most of whom lived in the territory of Utrecht, also paid the operating costs of the Diemerdijk Water Board.

According to Fransen, differences between *dijkplichtigen* and *waalplichtigen* as well as differing political objectives in Holland and Utrecht often made broad agreement on major hydraulic issues difficult or impossible to attain. For example, a series of storms during the late sixteenth and early seventeenth centuries caused considerable damage that led to much more of the Diemerdijk being protected by wood and iron reinforcement, but such reinforcement was extremely costly and charged primarily to the *dijkplichtigen*. Various parties in Holland, especially the city of Amsterdam (much of the city and its hinterland were protected by the dike), favoured spreading these rising costs over all who were protected by the dike, especially the *waalplichtigen* in Utrecht, but Utrecht officials constantly opposed such moves. As the maintenance burden mounted

for *dijkplichtigen*, many abandoned their land and its associated maintenance costs through a ritual known as *spadesteken*: sticking ones spade into the dike and leaving it there. Land thus abandoned fell to the Diemerdijk Water Board which took over maintenance, the costs of which thus fell to the *waalplichtigen*, much to the chagrin of Utrecht officials. Similar difficulties arose over the removal of the Hinderdam, which brought toll income to Utrecht, to the mouth of the Vecht in Holland, a move designed to shorten the length of the Diemerdijk. The decision to replace the wooden reinforcements with stone because of ship worm infestation of pilings and timbers caused similar strains in political and financial relations. Through it all, however, the Diemerdijk was maintained and restored after breaches, often through the intervention of the city of Amsterdam, which was represented on the Water Board. In such cases the city might secure necessary funding as well as provide executive leadership in carrying out restorations.

Fransen has produced a thorough, well-documented study that has accomplished what he set out to do: to reveal how the maintenance of the Diemerdijk was financed during the period 1591 and 1864 and to explain how such financing was accomplished within the ecological, economic, political, and technological contexts of the time. His work is based on rich documentary evidence, including a nearly complete series of accounts for the Diemerdijk from the late sixteenth onward. This work should be read by anyone interested in understanding the long history of water management in the Netherlands.

William H. TeBrake, University of Maine