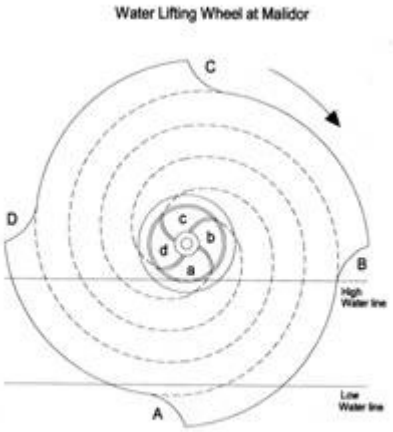
An Unusual Wheel for Lifting Water in France

By Jeff Hawksley

If you visit Le Lude, a small French town about 45 km south of Le Mans, you are advised to find the pleasure park of Malidor, walk past the miniature golf and prepare to be astonished to find a huge iron wheel rearing up beside the river. This is a water lifting wheel, built in 1870 to raise water from the River Loir to irrigate the fields nearby. It is about 7 metres diameter and provided enough water to irrigate "around 100 hectares" so it really did shift some water. And it did so for some 90 years until it went out of use in the 1960s.



Looking at the photograph it is made up of two circular iron discs with four scoops set around the circumference, but it is not clear how it works. Following the lines of rivets reveals that the space between the two discs is divided into four spiral passages, shown diagrammatically in the sketch. Each spirals inwards from an entry at the rim to an opening at the centre. Following a passage with a pencil from entry A leads to the centre opening a. B leads to b and so on. So how does it work? The wheel turns clockwise so water scooped in at A will, as the wheel turns, follow the spiral and eventually emerge at a, 1.8 metres above the low water level. From here it flows along the concrete channel and from here to the fields.

The wheel is driven by a water wheel through a pair of gears so arranged that the lifting wheel runs at about half the speed of the water wheel. Clearly the inlet water level for the water wheel is the same as the low water level of the lifting wheel so the water wheel is only operating with quite a low head – an undershot or maybe a low-breast wheel. It was not possible to make a full inspection. Unfortunately the water wheel is in a poor state and most of the wooden paddles have been dislodged. This is a shame as the installation appears to be quite rare.

HMG member Jeff Hawksley trained as a Marine Engineer and served at sea in the Merchant Navy. In 1972 he came to Hampshire to work as a lecturer at Southampton College of Technology (now Solent University). Water has been an important theme through his life and his interest in mills began after retirement and he has made a particular study of horizontal

watermills and of the performance of waterwheels. Jeff gave an illuminating talk on the uses of horizontal waterwheels at the SPAB Autumn Meeting last November.

Jeff has been a regular contributor to Mill News, the quarterly magazine of the SPAB Mills Section. Other published work includes:-

Watermills in Shetland pub. in International Molinology No. 68, July 2004

The Power and Glory of Waterwheels published by SPAB Mills Section, 2008

Des Roues à Cuve dans le sud-ouest de la France pub. in Moulins de France No. 74, April 2008

How Efficient were Horizontal Waterwheels? pub. in Transactions of the 10th International Symposium of International Molinological Society, Virginia, USA. September 2000

The Power and Efficiency of Waterwheels in Theory and Practice: pub in Transactions of the 11th International Symposium of the International Molinological Society, Portugal, September 2004

Regolfo Watermills, their Construction and Performance: Transactions of the 12th International Symposium of the International Molinological Society, The Netherlands. June 2007

Romsey Mills & Waterways (co-author with several others) published by LTVAS 1998