



# BALLYCOPELAND WINDMILL

English Translation

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### County Down

#### Milling

From man's earliest attempts at agriculture – in Ireland perhaps 6,000 years ago – it has been important to find ways of grinding grain. In prehistoric times various kinds of stone grain rubbers were used (querns), and in Early Christian times (c. 500-1200 AD) hand querns continued to be used, but early laws show that mills, doubtless water-powered, were widespread and important. Recently parts of two wooden mills of the 8th and 9th centuries have been found near the river Bann in Antrim and Londonderry. Windmills were first used in Britain in the twelfth century but the earliest evidence for windmills in Ireland is from seventeenth-century and later maps.

#### History of Ballycopeland Windmill

East Down is one of the best grain-growing areas in Ireland and windmills have long been a prominent feature of the landscape. Over a hundred windmills are recorded in the county, clustering especially densely in the Ards peninsula. Legislation encouraged grain growing in the late eighteenth century and Ballycopeland Mill may date from the 1780s or 1790s, though its precise date of building is not known. It appears in the first Ordnance Survey map and a valuation list in the 1830s. The McGilton family worked the mill from 1845 to 1915, and the last miller, Samuel McGilton, offered it to the state in 1935 after twenty years of disuse. Major structural repairs to the cap and sails were necessary in the 1930s and further major work was done in the 1950s, but only recently has the mill been brought back into working order, involving highly skilled and specialised replacement of iron and wooden parts and refurbishing of the sails.

#### Outside

The corn arrived first at the kiln-house in the range of buildings extending upslope from the road. Though long disused and lacking many of its fittings, the kiln is being restored and the miller's house beyond is taking on a new life as a display area. After drying in the kiln the corn continued on its way to the mill.

The mill is of the tower type, with a mobile cap moved by a fantail so that the sails always face the prevailing wind. The tapering tower is built of local stone, plastered and whitewashed. A cobbled track around the mill provided room for turning horses and carts and also led to a W. door, used when the sails were obstructing the main door to the E.

#### Inside

In order to follow the milling process in the correct order, the visitor is recommended to start by climbing the steps (taking care on the steep ascent) to the top level, the Hopper Floor. The sacks of dried grain were pulled up through a series of trap doors by the sack hoist (1), worked by friction with the bevelled top of the main shaft (2). The grain was emptied into one of the three hoppers leading down to the stones below. The long one between the stairs and the wall (E.) was for wheatmeal, the long one opposite for shelling (removing the hulls from the grain), and the smaller square one to the N. for oatmeal. When the sails are still this floor is quiet, but when they are turning the full power of the mill can be felt.

At the centre is the main shaft (2), of pitch pine, which must be a ship's mast, upended and re-used (rope friction marks are clear on it). On the main shaft is the wallower (3) whose bevelled teeth engage with the brake wheel (4) which clasps the wind shaft (5), to which the sails are attached. As the sails turn, the power is transmitted through wind shaft, brake wheel, wallower and main shaft to the Drive Floor below. Through the wind shaft passes an iron bar, the striking rod (6), which enables the setting of the sails to be altered, even when the mill is in motion. A point of particular interest is the striking gear – Hooper's Patent Reefing Gear – which may be unique in the British Isles. When the mill is at rest the blinds are folded (not rolled, the usual method). The amount of sailcloth unfolded and exposed to the wind is varied to suit the wind, the kind of milling being done and the number of stones in use. The sailcloth was formerly canvas but now is Terylene. The sails can be slowed and stopped by applying the brake shoes. The cap rotates on top of the stone walls, the ends of its cross beams sliding on a well-greased ring of smooth iron plates (the dead curb) and the fantail (7) ensures that the sails always face into the 'eye of the wind'. When the wind is square onto the sails they have full power and the fantail is unaffected, but if the wind veers it catches the fantail's blades and the whole cap is turned, bringing the sails back into the wind.

Now go down to the third level, the Stones Floor, where the main features are the three hoppers and three pairs of stones encased in wooden 'tuns' (one shown in cover illustration). The main shaft passes straight through this floor to the Drive Floor below. The stones include an imported 'French burr' made up of many small pieces of stone, kept tightly in place with an iron band. Through the centre of the lower (bed) stone passes the stone spindle, driven by gears on the floor below, and the upper (runner) stone balances on four prongs projecting from the spindle. From the large hopper above the grain falls into a smaller hopper supported by a wooden frame or 'horse', then into a loose wooden shoe which is vibrated by the 'damsel' (an extension of the spindle), and by this action the grain is fed into the eye of the runner stone. The stones are carefully distanced

apart during use to give the desired degree of grind, and it is important to guard against their rubbing together and overheating since fire in a mill is a serious hazard. The stones were periodically redressed with a mill-pick, perhaps twice a year, to maintain the necessary rough surface.

The second level is the Drive Floor. The horizontal great spur wheel (8) is clasped round the lower end of the main shaft, engaging with and driving the three stone nuts (9) whose axles are the stone spindles which drive the runner stones above. Each spindle is supported in a cast iron bridging box fixed to a timber bridge tree or beam (10). The working distance between the two stones is adjusted by raising or lowering one end of the beam with screws on the ground floor. A large screw under the bridge tree allows the stone nut to be raised, so interrupting the drive to the spindle and the turning of the runner stone above. A fanbelt from below the great spur wheel drove a fan on the S. side, opposite the stairs. A strong draught blew the light husks and dust sideways and out into a dust-house on the S. side whilst the heavier shelled oats dropped to the ground floor. There is also a sieve for the wheatmeal on the E. side (11).

Now return to the Ground Floor where the process begins and ends. Overhead are the three iron

screws which lift the bridge trees and runner stones. Against the N. wall is the large meals sieve (12) and the end of the sack hoist (1) awaits its next load. Two chutes lead down from the wheatmeal stone to fill the sacks below. Ballycopeland was a provender mill producing oatmeal and wheatmeal for human consumption, but not flour, and a variety of animal feedstuffs. Local memory suggests that these included shelled and bruised oats, yellow (maize) meal, kibbled grain (partly ground for poultry feed), peas and beans.

The towers of ruined mills are still a familiar sight in Co. Down, and for over 60 years Ballycopeland Windmill was silent, but patient, skilful craftsmanship has brought it back to life. In March 1978 the mill once again ground grain and work will continue to make it fully operational. Ballycopeland is the only working windmill in the whole of Ireland, a precious survival and a valuable reminder of a once important source of power.

**Further Reading** Green, E. R. R. *The Industrial Archaeology of County Down* (HMSO 1963); Rhodes, P.S., *A Guide to Ballycopeland Windmill* (HMSO 1972).

**Access** One mile W. of Millisle, just N. of the B172 to Newtownards (grid. Ref. J579761). NB the mill is not normally working during visiting hours.

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