

# WATERMILLS ON THE RIVER EDEN

by ANDERS JESPERSEN

## FOREWORD

DURING my stay with the Fife County Council Planning Department in Cupar, Fife, from 1948 to 1950 I used my spare time to compile a report on the River Eden water-mills<sup>1</sup> of which this paper is an abstract. While I would not say the Eden mills were outstanding the survey enabled me to record and analyse the topographical features introduced by milling to the Scottish landscape.

Unfortunately many of the watermills standing in 1948-50 have already been destroyed. Had a body similar to the Danish Mill Preservation Board (formed in 1953 to save a representative selection of Danish mills) been in operation some of these might have been saved. It is my sincere hope that Scotland will recognise the need to preserve for coming generations some of the fine water-driven plants which still survive, both as relics of an earlier age and as examples of the work of early Scottish millwrights and engineers.

## INTRODUCTION

The River Eden in Fife is approximately 50 km. (31 miles) long. Today the name covers 42 km. of the course – measured upstream from Guard Bridge – but 300 years ago the 12 km. of the upper reaches were called Miglo River, and only 12 mills were mentioned on the whole course.

As a result of the Industrial Revolution the number of mills increased to 30, but in December 1948, when this survey was taken, only 4 mills driven by 7 water-wheels were still in operation.

The rocky subsoil is unable to accumulate any great amount of water, and the volume of the river is therefore largely dependent on the rainfall. Flooding is often a menace, and all the mills are situated on the valley side at a safe distance from the river. Weirs – like the one in Pl. XXII, 1, 2 – directed the water through a total of 15 km. of lades to the 30 mills, leaving – in dry spells – one third of the natural river course idle. Today only 3.5 km. of lade are in use.

The longitudinal section in fig. 1 clearly reveals the river as being divided into an upper and a lower course. The better gradient on the upper course makes it easier for the mills to dispose of their back water, and the tail lades on this part of the course are, on the average, only 38 of each 100 lengths units of head lade. On the lower course, however, the poor gradient, and ample water flow have made it necessary to increase this figure to 77 in 100.

Further, the lades made a short-cut on all lower course mills but one, to give

<sup>1</sup> Thanks to a grant from the Walker and Russell Trusts two copies of this four-volume report were made, one to be filed with the St Andrews University Library, the other with the Library of the Society of Antiquaries in Edinburgh. This report will eventually be revised and published as vol. 10 of Report on Watermills.

the mills the benefit of the gradient of the winding river. On the upper course we find short-cut and detour lades evenly employed, as the lades are following the contours in the side of the narrow valley, while the river is cutting a rather straight course in the bottom of the valley.

The lower course was first developed – it held 83% of the mills in 1645 – but by 1854 there were almost the same number of mills on both parts of the river. Today 75% of the mills still in use are found on the lower course. The reason for this trend was the abundance of water on the lower course; the upper course is hardly more than a burn.

Originally all mills were engaged in grinding cereals, but from about 1800 flax spinning took over on nearly one third of the mills. When the flax trade later met with difficulties, cereal-grinding was re-introduced in several places, and when finally this trade also was concentrated in large towns outside the area, the River Eden eventually found itself idle, except for anglers.

#### THE MILLS

GB-37/001 *Burnside Mill* N.G.R. 1607<sup>1</sup>

This small meal mill dates back to about 1700. It took its water from the Beaty Burn and the Carmore Burn (now River Eden), and it is the only Eden mill situated in Kinross. The water-colour in Pl. XXI, 1 envisages an overshot wheel driving the two oat-meal stones. The building on the right was the kiln for drying the corn. Ruins removed 1950.

GB-37/002 *Gleneden Mill* N.G.R. 1708

The starch works was probably established around 1800 with the expansion of agriculture and the linen trade. Barley or potatoes were steeped and squashed on a millstone and the starch separated by evaporation. No trace is left in the field, only maps indicate the location.

GB-37/003 *Bannety Mill* N.G.R. 1708

This mill was mentioned in 1645, but the present buildings only date back to 1800. It was driven by an over- or backshot waterwheel, and had two pairs of stones. In 1854 the mill was termed 'Flour Mill', but the kiln indicates additional oat-meal milling. The mill ceased to function about 1920.

GB-37/004 *Edenshead Mill* N.G.R. 1809

No trace is left in the field of this small farm mill. It was removed before 1820, and the location is only known from an older, private map.

GB-37/005 *Gateside Mill* N.G.R. 1809

Originally the mill took its water from a weir 130 m. higher up the river. The pond was formed later. The mill was probably built as a bobbin mill and is still working as such. The water is not used for power but only as a supply for the sprinkler plant.

<sup>1</sup> National Grid Reference numbers designate the single km. squares in which each mill, with its mill-lade, is situated. All lie within the 100 km. square NO.

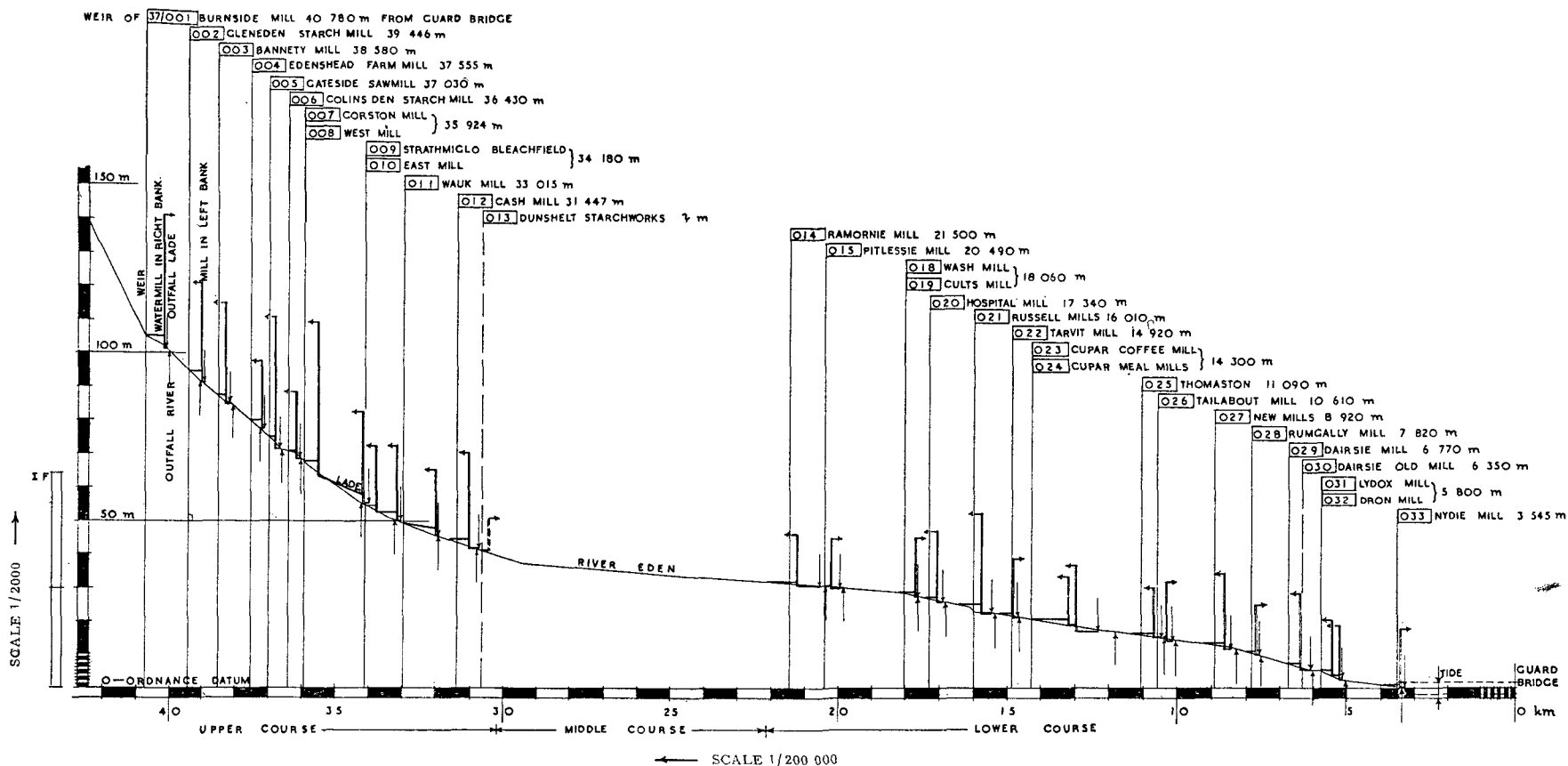


FIG. 1. River Eden: longitudinal section

The elevations for this diagrammatical section are taken from Trunk Sewer Proposals, prepared for Fife County Council by Leslie & Reid, Civil Engineers, Edinburgh. Supplemented by observations in the field, and drawn by Anders Jespersen, Cupar, Fife, 31st January 1949 and 28th April 1950.

The lades are connected to the river at the weir point. The outfall points are marked by arrows from above (lade) and below (river). In the field these two points are, of course, identical, but when the tracks are stretched out on this plan, the lade - making a detour - will 'by-pass' the river outfall point, and vice versa where the lade makes a short cut. Note the large short cut at Cupar Mills (see also fig. 3).

The vertical lines going right through indicate the position of the weirs. The waterwheels are shown at the short bold lines, the total head (F) is drawn to scale 1/200. The small arrows at the top indicate left or right bank. Note the poor gradient of the Eden through the Howe of Fife. No mills were ever built here.

GB-37/006 *Colins Den Mill* N.G.R. 1909

This mill was referred to both as a barley mill and as a starch mill, and it is likely that pearled barley was used for starch production. The mill must have been out of operation before the railway was built in 1857, as the lade crossed the line twice. Ducts were built to accommodate the lade, but were never used.

GB-37/007 *Corston Mill* N.G.R. 1909

The only mill in operation on the upper course in 1948. An overshot waterwheel worked an oat-meal and pearl barley mill until 1900. Later the wheel was used for the threshing mill, and today only a small electricity generator and a bruiser are worked by the wheel. See Pl. XXI, 2.

GB-37/008 *West Mill* N.G.R. 2110

This meal mill was worked by a breastshot wheel off the tail water from Corston Mill. The mill building itself is in a ruinous state, and the waterwheel is gone, but the photo Pl. XXI, 3 shows the picturesque setting with the West Lomond in the background.

GB-37/009 *Strathmiglo Bleachfield* N.G.R. 2110

The Bleachfield was in use in 1914, but by 1948 only one house remained – without any signs of past activity. The building was dated 1772, and was removed in 1949 to give room for council houses. The Bleachfield had one or two waterwheels and utilised the low lying field between the lade and the River Eden to bleach the flax yarn.

GB-37/010 *East Mill* N.G.R. 2110

A backshot waterwheel – supplied by the tail water from Strathmiglo Bleachfield – worked a meal and barley mill, which was put of out operation before 1914. The kiln to the extreme left in Pl. XXI, 4 is separated from the mill by the husk room to prevent or at least to isolate fires. The mill was mentioned in 1645.

GB-37/011 *Wauk Mill* N.G.R. 2310

The name indicates a beetling mill for fulling cloth, but no trace is left in the field.

GB-37/012 *Cash Mill* N.G.R. 2410

This mill was working in 1914, but was later given up, as it hindered the flow of the River Eden, the gradient of which is now flattening out; see the longitudinal section in fig. 1.

GB-37/013 *Dunshelt Starch Works* N.G.R. 2410

It has not been established whether this mill was driven by the River Eden or not. It is situated on a mound but might have been worked by a remote drive from a wheel at the river side. Two starch-grinding stones remain, but nothing else except the building, stripped of all plant.

GB-37/014 *Ramornie Mill* N.G.R. 3209

No trace is left in the field. It was probably a beetling mill or a lint mill.



GB-37/015 *Pitlessie Mill* N.G.R. 3310

The mill processed oats and barley, but was given up before 1900 because of the flooding it caused. The hairpin bend at the weir site still jams the water during spate. The waterwheel was undershot and was removed during the last war for scrap iron. The gearing was removed in 1964. The mill was mentioned in 1645. The carving over the door is pictured in Pl. XXIII, 1.

GB-37/016 & /017 *Ballo Mills* N.G.R. 3210, 3310

It has not been possible to ascertain whether this mill(s) was worked off the Eden or off the Ranquillor Burn. There is no trace left in the field.

GB-37/018 & /019 *Wash Mill and Cults Mills* N.G.R. 3410

Wash Mill was a beetling mill (no trace is left). Cults Mill was mentioned in 1645. In 1854 it was a meal mill, in 1914 a saw mill, and today defunct. A threshing mill on a tributary stream is also redundant.

GB-37/020 *Hospital Mill* N.G.R. 3411

Originally a flax spinning mill, but later turned into a bobbin mill. When this was burned down, only part of it was rebuilt as an ordinary saw mill for the Crawford Estate. The breastshot paddlewheel is still used occasionally.

GB-37/021 *Russell Mills* N.G.R. 3511

This flax mill employed 80 people in 1840, 200 by 1867, and 280 in 1935 when it was closed down. The 7-6-m., 50-h.p. breastshot waterwheel was superseded by a turbine in 1890, and from 1905 water power was confined to generating electricity for lighting the mill, which was driven by steam power. (Pl. XXIII, 2)

GB-37/022 *Tarvit Mill* N.G.R. 3612

In 1645 the mill was engaged in cereal activity, but in 1799 it was transformed into a flax-spinning mill. It was closed down some time after 1914, and is today in ruins.

GB-37/023 *Cupar Coffee Mill* N.G.R. 3613

The two Cupar Mills were supplied from the same weir as seen on the map, fig. 3, and on Pl. XXII, 1, 2. In 1820 the upper mill was called the 'Spinning Mill', and in 1840 it employed 33 people. In 1867, 100 worked in the mill, but about the time of the first World War it died out. The mill had a short revival as a coffee mill in 1920, whence the name. It had two breastshot waterwheels.

GB-37/024 *Cupar Meal Mills* N.G.R. 3713

The mill was mentioned in 1645, but is much older. It belonged to the monks of St Andrews, and an annual £30 feu-duty is still levied by the University. The mill had 5 breastshot paddlewheels, but only 3 are in use today (1948). Activities were: flour-, meal-, barley-, and provender-grinding; threshing and straw-cutting. Today: meal, provender and straw-cutting.

GB-37/025 *Thomaston Mill* N.G.R. 3814

This meal and flour mill ceased to function sometime around 1900. Today there is no trace of past activity, except overgrown lades.

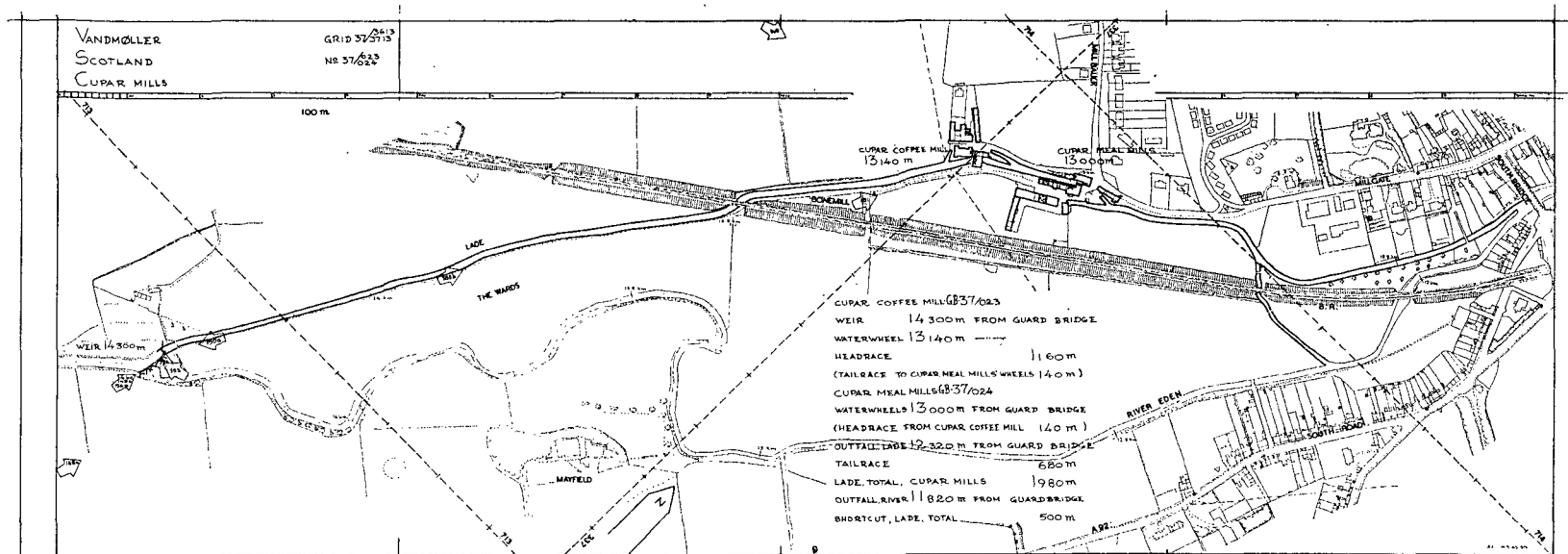


FIG. 3. Cupar Coffee Mill and Cupar Mills

On the lower course we find the reverse example: the tranquil river winding through the meadow. The lade gathers head by short-cutting these bends, saving a 500-m. tour on 1980-m. lade or 25·2%.

The plans are based on Ordnance Survey plans to scale 1/2500, reduced to scale 1/10,000. The National Grid lines are at 1-km. intervals. (By permission of the Director General.)

GB-37/026 *Tailabout Mill* N.G.R. 3814

Most of this flour mill is still standing, although it has been out of use since about 1915-20. It was worked by an undershot waterwheel, which also drove a threshing mill.

GB-37/027 *New Mills* N.G.R. 3915

The mill was mentioned in 1645. In 1854 it was a flax and barley mill, but later spinning was given up, and a flour mill installed. The barley mill was extended by a meal mill, and the gearing is pictured in Pl. XXIV, 3, 4 and 5. The flax/flour mill was on the left of the lade (see Pl. XXIII, 4 right), the meal/barley mill on the right (centre in Plate). In 1948 this fine mill was still functioning; in 1950 the old gearing was stripped.

GB-37/028 *Rumgally Mill* N.G.R. 4015

Although mentioned in 1645, very little is known about this mill. It may have been processing flax until about a century ago. Few traces are left in the field.

GB-37/029 & /030 *Dairsie Mills* N.G.R. 4115

The mill was mentioned in 1645 as Dearsy Mill, and the oldest mill site was directly below Dairsie Castle. Later, the mill was removed to the present site, the weir being moved 420 m. upstream to give the mill a better head. In the process, however, the Ceres Burn with a large catchment area was thrown off. Of the old mill there is no trace, the 'new' mill is in ruins (meal mill and kiln).

GB-37/031 *Lydox Mill* N.G.R. 4116

This mill existed before 1645. Later a spinning mill was attached to the meal mill, and cereal-grinding was eventually given up. The flax mill was gutted by fire in 1900, and the 40 workers must have left the parish, as the population figure drops at this date.

GB-37/032 *Dron Mill* N.G.R. 4116

This was the smallest mill on the River Eden. It took water from the tail race of Lydox Mill, and contained - despite its limited dimensions - two pairs of stones, and a kiln, the lower part of which is cut out in the sandstone rock. The breastshot wheel was situated at the gable, which was built in ashlar stone-work, terminating in a string course just over the wheel, and above this rubble stone-work. The mill was on the 1645 map.

GB-37/033 *Nydie Mill* N.G.R. 4216

Although mentioned in 1645, this mill was given up before 1914. It processed oat-meal, and must have been considerably hindered by the tide as the spring tides reached its weir. The approach road is very steep, and must have been an additional handicap to the mill.





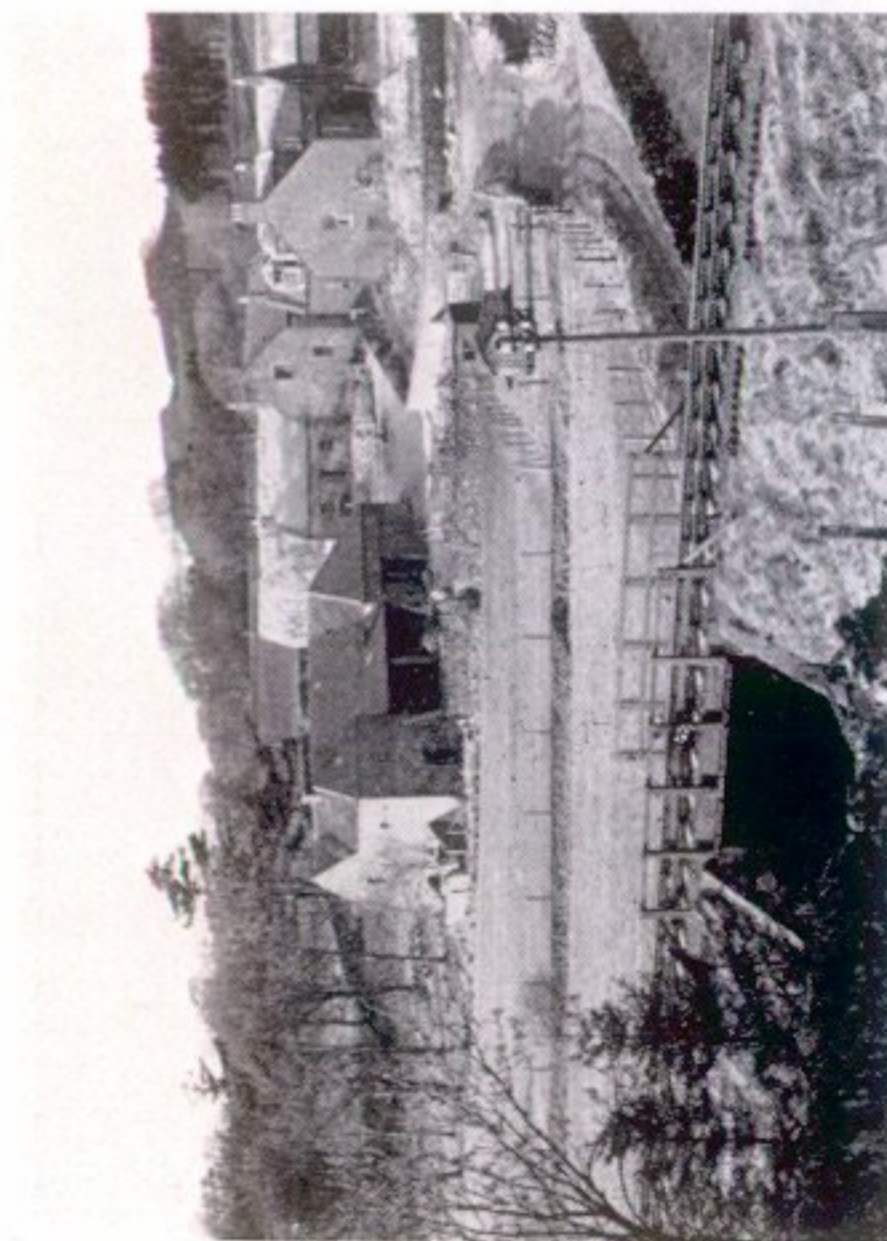
Burnside Mill

1. Watercolour by A. Jespersen, reconstructing the mill on the basis of the ruins remaining in 1948. The mill had an overshot wheel and two pairs of stones. The kiln is on the right, separated from the mill as a safeguard against fire



West Mill

3. The mill seen from Strathmiglo towards the West Lomonds (background). Left to right: residence (obscured by haystacks), mill and kiln



Corston Mill

2. The farm mill viewed from across the Eden. Left to right: corn mill with kiln - threshing mill. Above that: farmworker's cottage and steading - owner's cottage. The Ladybank to Kinross railway passes in the foreground



East Mill

4. The mill viewed from the far bank of the Eden. Left to right: kiln - mill - steading. The head lade passes just at the foot of the big tree, and terminates at the waterwheel house (covered by ivy). The tail goes into the Eden at the end of the trees in the background (extreme right)



Cupar Mills

1. Weir at Pt. 14,300 m. from Guard Bridge – during a drought, 9th July 1949, 13 30 hrs GMT. All water passes through the approach sluice gates in the background to the busy mills. A little compensation water is supposed to pass through the old river course by the sluice gate in the foreground



Cupar Mills

2. Weir at Pt. 14,300 m. from Guard Bridge – during spate, 19th March 1950, 15 50 hrs GMT. Some  $9 \text{ m}^3/\text{sec}$ . arrive at the weir;  $\frac{1}{3}$  is allowed to pass by the lade,  $\frac{2}{3}$  are thrown over the 42 m. long crown of the weir in a 0.2 m. thick flow



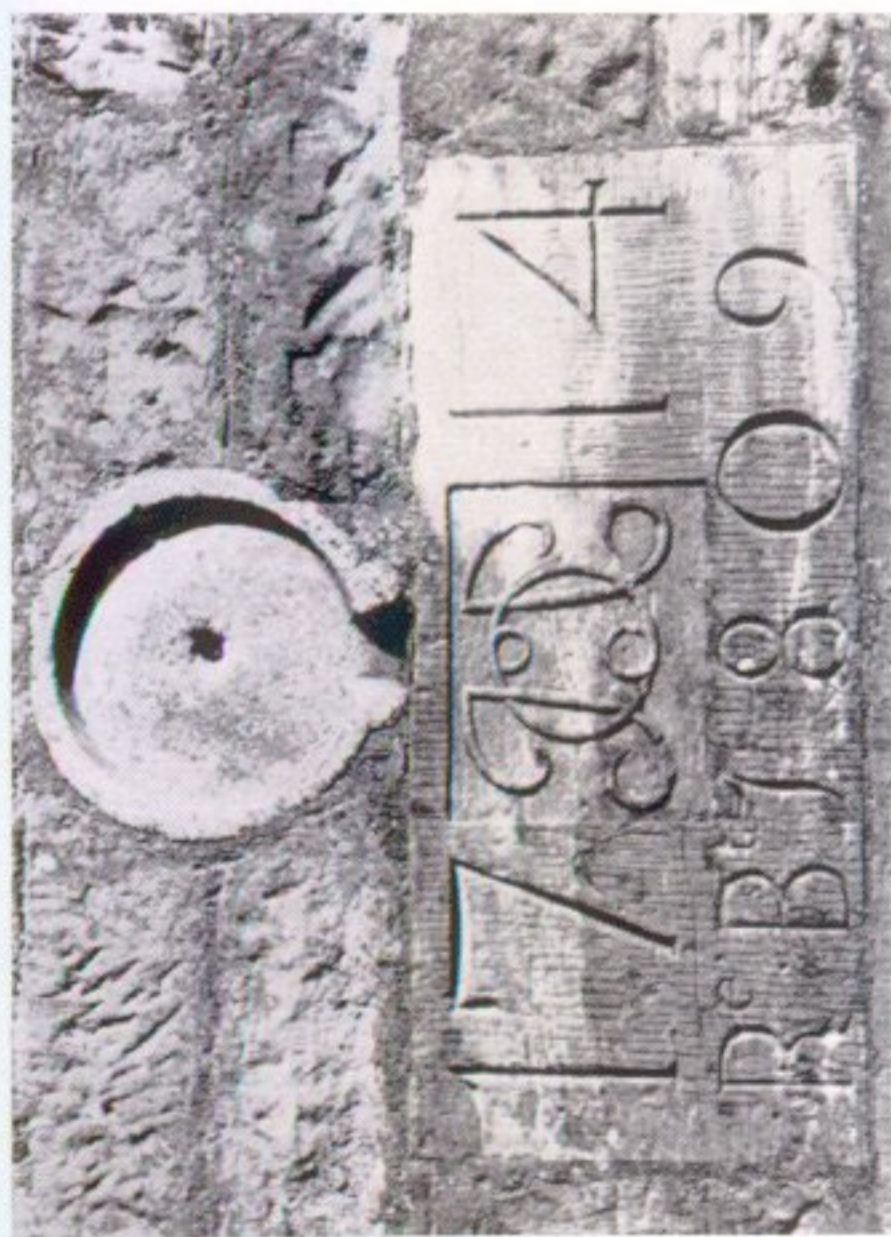
Cupar Mills

3. Mr Barclay inspecting the paddlewheel used for straw-cutting (formerly threshing mill)



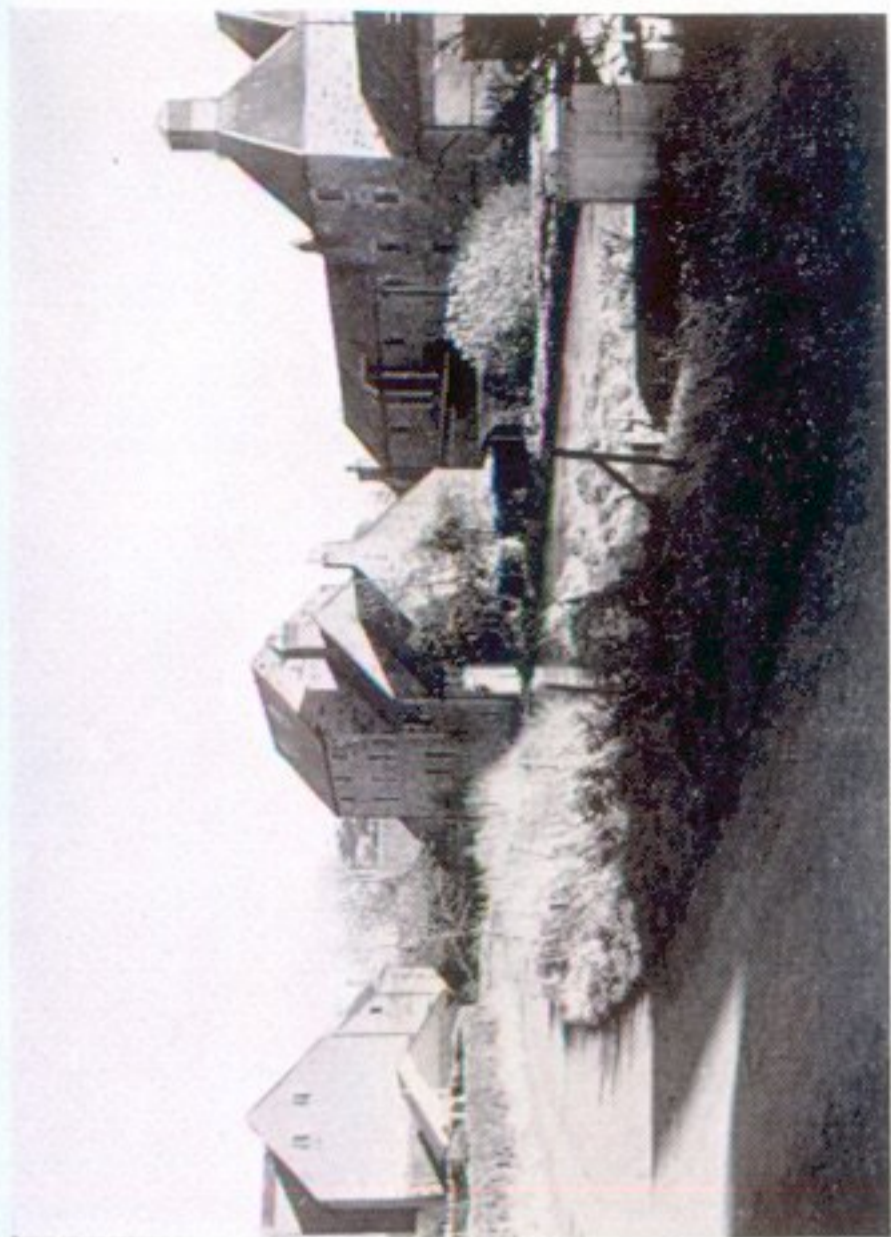
New Mills

4. The head lade arriving at the mill: on the right is the meal mill with its paddlewheel. Husks are blown out on the roof. The kiln is in the background. On the left (out of sight) is the flour mill



Pitlessie Mill

1. The carving over the doorway to the mill. The ornament on top is an old hand quern (bed stone). The mill, according to the stone, was rebuilt 1809, superseding an older mill of 1714



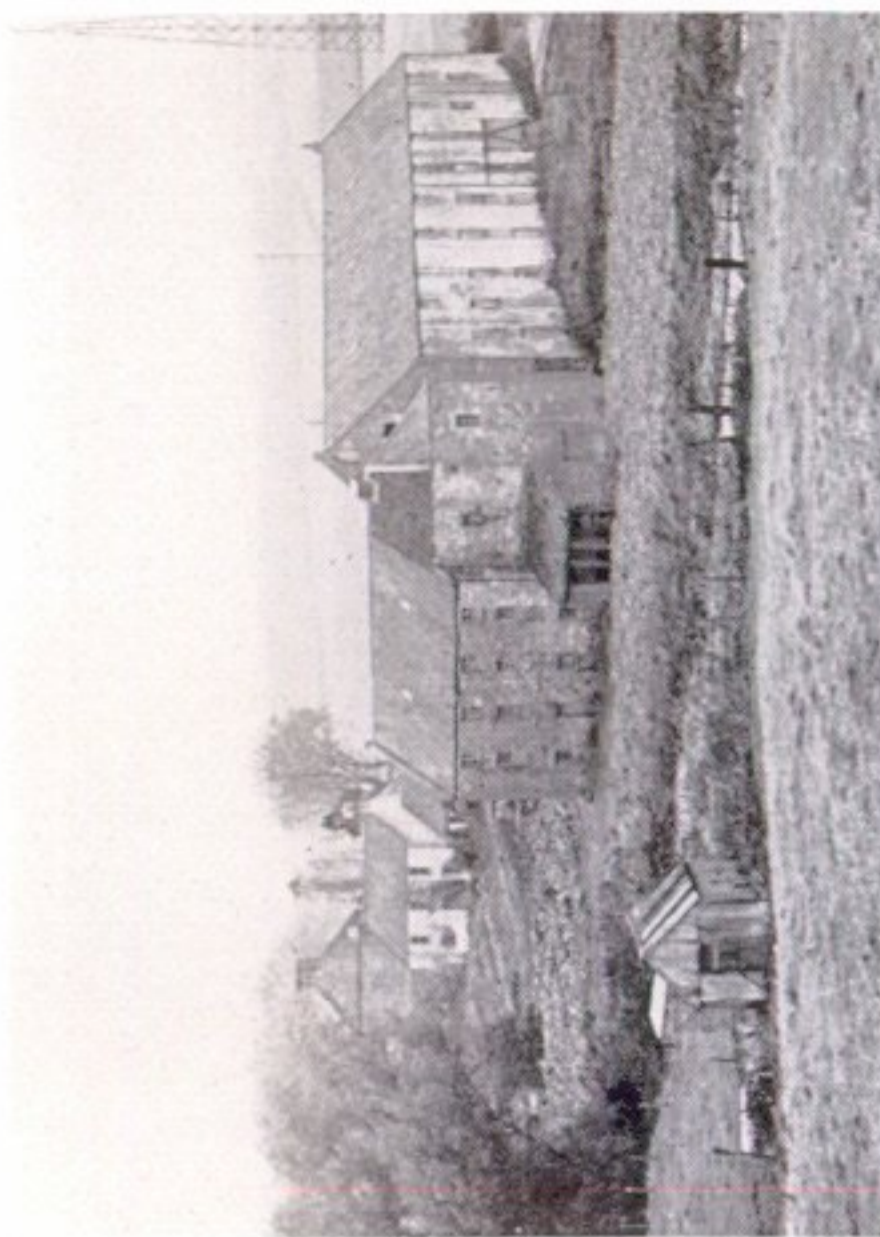
Cupar Meal Mills

3. Left: front mill - small building, centre: threshing mill - tall building, centre: meal mill. Extreme right: Malt Barns (once Cupar Foundry). The head lade flows in the centre from right to left



Russell Mills

2. The best survival of the textile trade on the Eden: the building and belfry is all that is left, however; all gearing is stripped, and the waterwheel was already superseded by a turbine in 1890



New Mills

4. Left to right: millowner's cottage (gable) - millworkers' cottages - meal mill - flour mill. The kiln for drying oats is on the right of the meal mill. The photo was taken from the farther bank of the River Eden



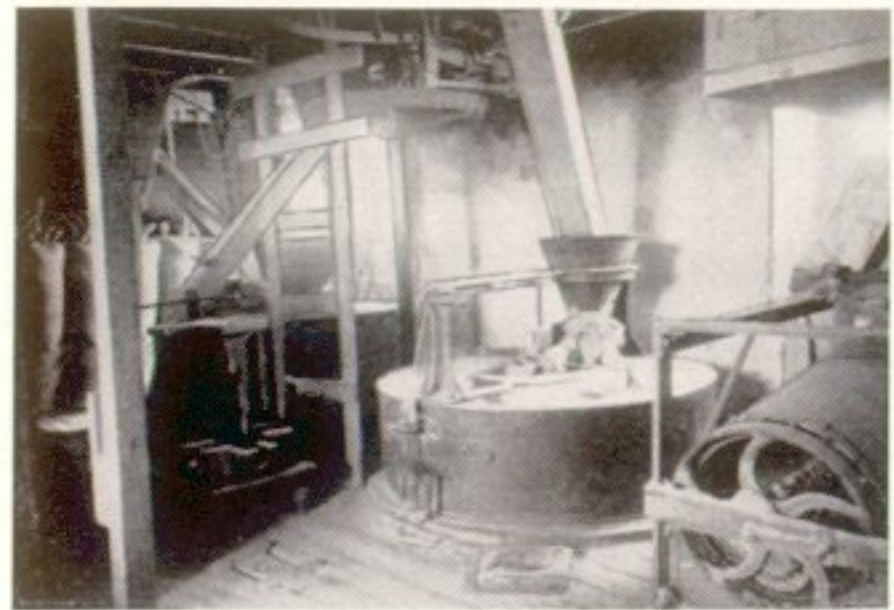
New Mills

1. The flour mill from the stone floor. The wheat stones (French burr) are situated in a row



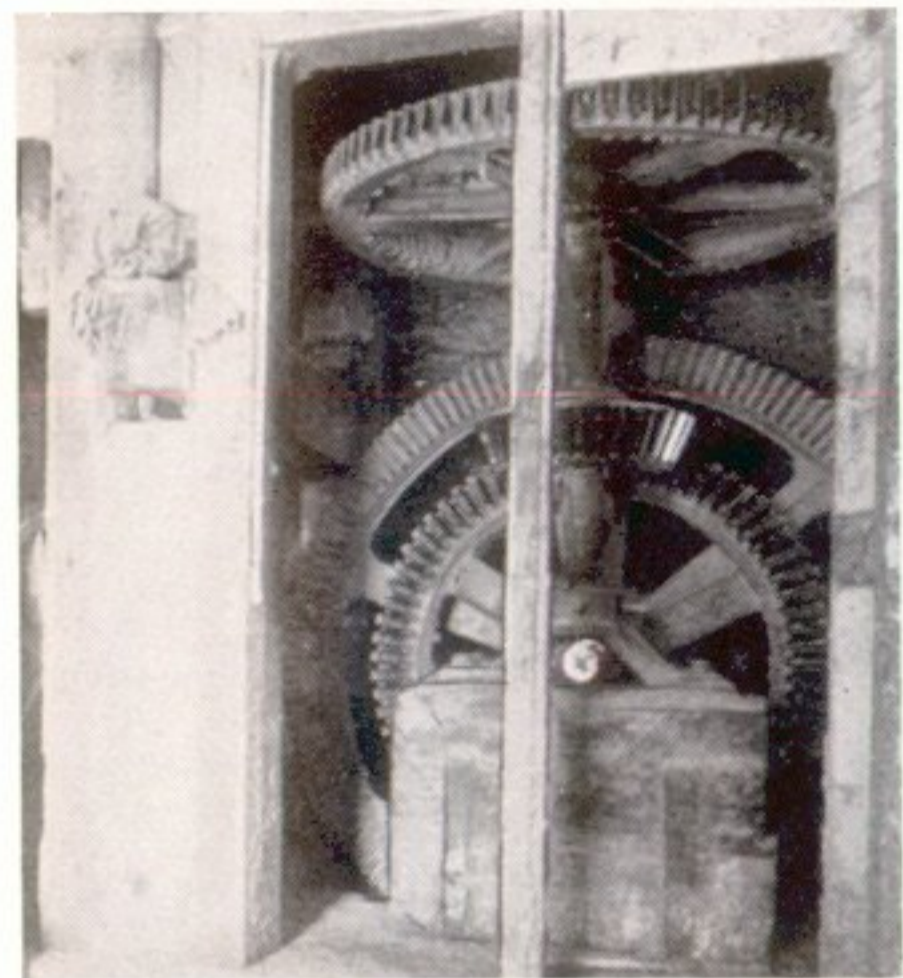
New Mills

2. The flour mill bridge floor: the grinding stones are driven from below by 'pitwheel and wallower'. The horizontal shaft engages (in the far background) with the waterwheel shaft by means of a spur gear. By this line shaft arrangement, the lay of the building perpendicular to the lade is utilised. The building was erected as a flax spinning mill, and later converted into a cereal mill



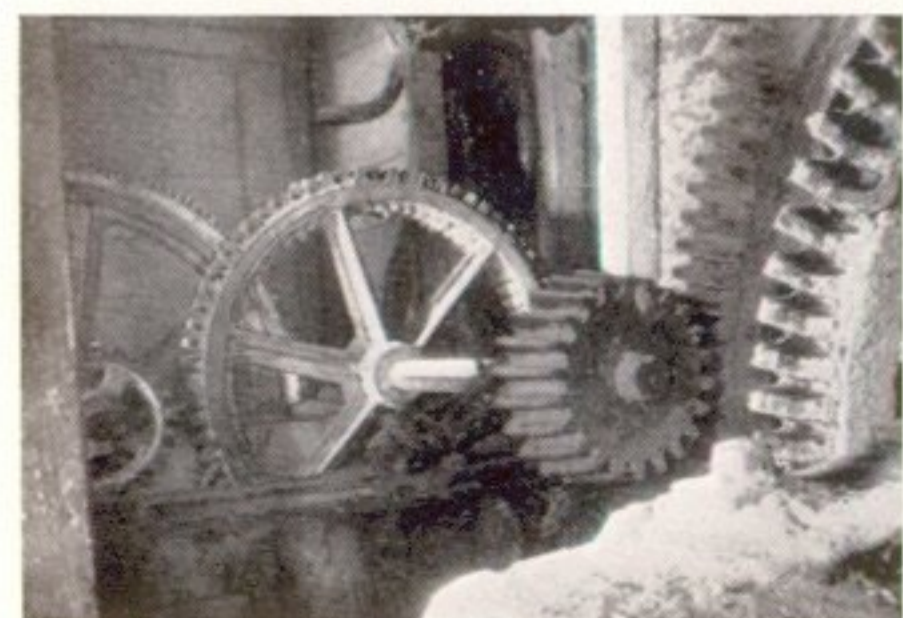
New Mills

3. The stone floor of the meal mill. The grinder is in the dark background, the shaler to the right of the upright shaft. The cockle cylinder on the extreme right



New Mills

4. The meal mill bridge floor immediately below: the 'upright underdrift' gearing from the paddlewheel on the other side of the wall, leading to the grinder above (left), and the shaler above (right). The larger pit wheel drives the barley stone on the left, see the photo below



New Mills

5. Meal mill bridge floor: the barley stone is driven off the large pit wheel