

## III.

WHIN-MILLS IN ABERDEENSHIRE. BY JAMES RITCHIE, F.E.I.S.,  
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The position of agriculture to-day in Aberdeenshire is very different from what it was a century or two ago. Now the county is one of the best cultivated in Scotland, its crops of oats and turnips are excellent, its black-polled and shorthorn cattle are famous the world over, and no beef realises a higher price in the London market than that sent from Aberdeenshire. But this state of matters is comparatively modern; not so long ago a great deal of the land now in cultivation was waste, being marshy and waterlogged, or covered with heather, whins, and broom, while even the cultivated land was overgrown with weeds to such an extent that the crops produced were scanty and of poor quality. The methods of cultivation too were primitive: the fields were unfenced and of all shapes and sizes. They were divided into "infield" and "outfield," that is, those near the farm-steading and those at a distance from it. To the former all the manure produced on the farm was applied, while the latter were worked as long as a paying crop was produced, and then, when their fertility for the time being was exhausted, they were allowed to lie fallow, till nature in some degree restored it. The farm buildings were poor, and so were the farmers. In ordinary times it was a hard struggle to make a living, and when bad seasons came, farmers and the country people in general often suffered great hardship. A bad harvest still inflicts loss on the farmer, but its effects on the general community have been largely modified by the importation of food from abroad. Formerly a bad harvest entailed not only financial loss, but often starvation and death, not only because there was little or no importation of foreign food-stuffs, but because, owing to bad roads and inefficient means of communication, the surplus of one district was not readily available to meet the wants of another, even within what we would now regard as easy reach.

Privations were not confined to the people of the district, the live stock also bore its share, and this share was all the greater owing to the system of farming then in vogue. Turnips were almost unknown in Aberdeenshire till the latter half of the eighteenth century, and even then were not largely cultivated. They were at first sown broadcast, and were regarded more as curiosities or as vegetables for domestic use than as an important farm crop. There were no extraneous supplies,

such as oil-cake and other feeding-stuffs, to give to the cattle, which had to depend solely on the food produced on the farm. In times of scarcity, when straw was short and grass scanty, the farmer had often great difficulty in carrying his stock safely through the winter till the fresh spring grass appeared. Sometimes he had to sacrifice his least valuable animals to save the lives of the more valuable ones. There is a "pot" or pool in the Don, near Parkhill, about six miles from Aberdeen, in which, tradition says, criminals were drowned in the days of "pot and gallows," and a large stone on the bank is still pointed out as the spot where the judge sat in order to see his sentence carried out. But the pot is said to have been used also for the drowning of foals in time of famine, when the owner had not sufficient food to keep both mare and foal alive. Better sacrifice a foal to save a mare than risk the loss of both by starvation. Of course, the foals so destroyed were of little value, since the horses were small and were used chiefly for carrying pack-saddles. The heavy work of the farm was done by oxen, and even they were of so little value that towards the close of the eighteenth century a strong young work ox could be bought for about £6 sterling, while an old worn-out one was sold to the butcher for sometimes as small a sum as £3.

Another local custom indicating the state of scarcity which might prevail in winter was that of "cattle lifting." When, after a hard winter or late spring, the grass did ultimately begin to grow, it occasionally happened that some of the cattle, reduced by a winter's want, were too weak to make their way to the grazings. As a consequence, neighbouring farmers banded together, and, proceeding from one farm to another, actually "lifted" the weakly cattle from the stalls to the pasture. The poor condition of the cattle may have been increased in some cases by the curious custom of bleeding living cattle in times of great scarcity, in order that the blood so obtained should be mixed with oatmeal and used as human food. It was a cruel and barbarous custom, but it shows to what straits our forerunners were brought by the menace of starvation.

#### I. THE USE OF WHINS.

It was in times like these that whins or gorse came to be used as cattle food. On sheep pasture the rounded bee-hive appearance of the whin bushes, caused by the sheep nibbling away the tender green shoots of the plants as they grow in early spring, shows how much this fare is appreciated. Whins were found to be equally good food for cattle and horses, and the old agricultural manuals contain chemical analyses designed to show that the nutriment of furze was almost equal to that

of clover hay and far exceeded that of turnips. So impressed were farmers with the feeding possibilities of whins that in some parts of Britain the crop was laid down in the ordinary way, the seeds being sown in March and the crop harvested in the autumn of the year following. "The sowing of whins for feeding of cattle," wrote an agriculturist on 6th April 1725, "takes mightily about London just now . . . this improvement comes from Wales, where it has been practised these hundred years."

Aberdeenshire farmers appear not to have taken so mightily to gorse-feeding as the Londoners; probably they limited their gorse harvest to the abundant supply on the rough ground, of which most farms had their share. But the use of the crop entailed on all one particular operation. Sheep browse only upon the tender shoots of the year, but general whin-cutting included the more woody portions of the plant and demanded that the spines should be destroyed if injury to the feeders was to be avoided. So whin-bruising had to be undertaken. In the south this process ultimately led to the development of transportable machinery, iron mills especially designed for the purpose; but in the north it seems to have remained at a more primitive level, leading to the development of a series of simple crushing implements.

These implements have all passed out of regular use, their purpose may soon be forgotten; it is the aim of this paper to set on record the evolution of these bygone agricultural instruments which seem once to have been universally distributed in Aberdeenshire—the whin-mills, or, in the vernacular, "fun-mulls."

## II. THE FLAIL.

On a small farm or croft where only a few cattle were kept, the quantity of whin shoots required would not be great, and no expensive apparatus was required. After protecting his hands with thick gloves, the farmer went to the nearest rough ground, and with a hook or sickle cut from the whin bushes as many young shoots as he needed. These he conveyed to the farm-steading and proceeded to render fit for the animals to eat. The ordinary implement used for threshing the grain crop at the time was the flail, made of two rods jointed together, one being used as the handle, the other as the beater. A modification of this implement served for beating the whins. It was made more effective by the attachment of sharpened strips of hoop iron to the "beater," so that, as blow after blow fell on the mass of whins, the sharp edges of the iron cut them into small pieces, more easily pulped. This was hard work, and could only be performed by an able-bodied man accustomed to the use of the implement.

## III. WOODEN MALLET AND BLOCK.

The use of the wooden mallet and block required much less exertion than the use of the flail. A quantity of shoots was placed on a large block, preferably of wood, though a stone block was sometimes used, and the shoots were beaten with a wooden mallet till all that had been gathered were reduced to pulp. The hammer end of the mallet had one face plain and the other set with edge-wise strips of hoop iron similar to those used on the flail. The whin shoots were beaten first with the iron-shod face to cut them into small pieces, and these were afterwards reduced to pulp by the plain face of the mallet. This work did not require the services of an able-bodied man, but could be performed by the crofter's own children.

The wooden blocks so used appear all to have perished, having been in all likelihood broken up for firewood when no longer required, but a few of the stone blocks still remain. One such stone block is still to be seen at the farm-steading of Upper Mills, about half a mile from Crathes Station, on the Deeside Railway, where it was used rather more than half a century ago by the tenant of the farm, Mr Hunter. It is simply a mass of whinstone with a smooth upper surface on which the whins were laid. A better form of block, provided with sides and back to keep the whins from falling off while being beaten, now lies in a very dilapidated condition in a small belt of plantation near the carpenter's shop at Skene. The slabs which originally formed the back and sides have become displaced and broken, but the older inhabitants still remember its appearance when complete.

## IV. ROLLER TYPE OF WHIN-MILL.

It will be readily understood that the use of the flail, or the block and mallet, was not quite satisfactory. Both methods were slow and tedious, and were inefficient where large quantities of fodder were required. The labour of ox or horse had to be invoked. To meet the greater need, a modification of the ordinary stone roller, with which nearly every farm was provided, was devised. The ordinary roller, being of the same diameter throughout its length, could not revolve in a circular course, and the modification aimed at removing this difficulty. The special whin-roller was made with a taper, the diameter at the outer end being several inches greater than the diameter at the inner end, so that a revolving motion became possible. It was usually somewhere about 4 feet in length and fully a foot in diameter, tapering slightly towards the inner end, where it was attached by a swivel to an iron pin, bedded into an upright stone firmly fixed in the

ground. The larger end was fitted with an arrangement to which a horse or an ox could be harnessed to supply the motive power for rotating the mill-stone. The circular area over which the roller travelled was called the "course," and was paved with flat stones. Upon these the whins were placed, and the horse or ox, yoked to the outer end of the roller, was driven round and round the course for an hour or more until the whin shoots were sufficiently crushed. To assist in reducing them to a pulp, they were now and again sprinkled with water by the man in charge of the operations. By this method a large quantity of whin fodder could be prepared daily, without an undue



Fig. 1. Course for Roller type of Whin-mill at Blairbowie, Chapel of Garioch.

amount of fatigue to the farmer, who had transferred the weight of the task to his beast of burden.

*Blairbowie, Chapel of Garioch* (fig. 1).—So far as I am aware, no whin-mill of the roller type in complete working order is now in existence in Aberdeenshire, though several dismantled ones may be seen. One such is to be found at the small farm of Blairbowie, about a mile south of Chapel of Garioch, and six miles north-west of Inverurie. The paved circular course on which the whins were crushed lies at the entrance to the farm-steading, and is complete, with the exception of the central pillar, to which the narrow end of the roller was attached. This pillar was removed, as it interfered with free ingress to the farm buildings. From the centre where the pillar stood to the inner border of the course measures 4 feet 4 inches, the paved course is 5 feet 8 inches broad, making a radius of 10 feet from the centre to

the outside circumference of the course. The roller stone now stands upright at the gate of the neighbouring field, only a few yards from its original site. It is 3 feet 8 inches long, the inner end having a diameter of 1 foot 6 inches, gradually increasing to 2 feet at the outer end, to which the tackle for rotating the stone was attached. This tackle has now disappeared. The roller is said to have been made by George Davidson, an Inverurie mason, about 1830, and it was in use for many years after that date. It took about an hour and a half to pulp a load of whins with this apparatus.

*Brackla* is situated to the north-west of Benachie, fully a mile

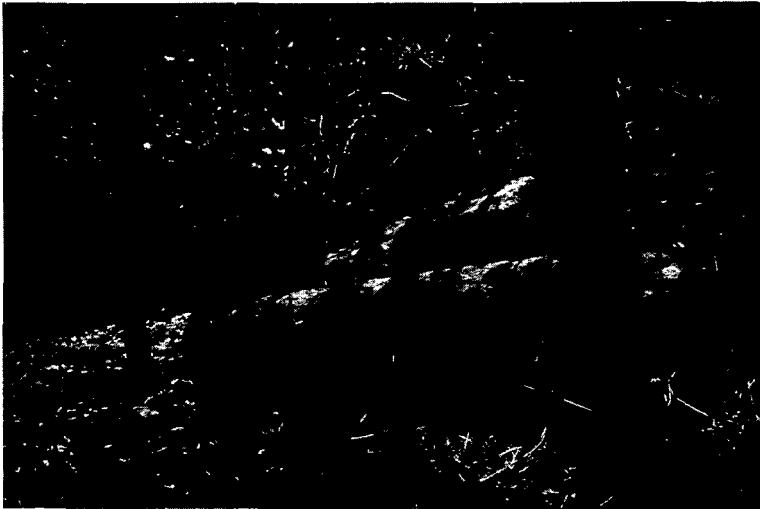


Fig. 2. Roller of Whin-mill, with Centre Stone and Iron Pin, at Brackla, Chapel of Garioch.

south of the village of Auchleven. It contains the remains of what, in its day, must have been one of the best specimens of the roller type of whin-mill. But it has long since been dismantled and the course destroyed, and now only the roller and the central block and pin remain (fig. 2). The roller is 4 feet 1 inch long, and 10 inches in diameter at the narrow end, gradually increasing to 16 inches at the outer or broad end. The central pin is made of iron, 1 foot high, and about an inch thick, and is firmly embedded in a block of granite 13 inches square and 2 feet high.

*Newpark, Parkhill.* — Another roller stone is used as a gate-post on the farm of Newpark, Parkhill, about six miles north of Aberdeen. It is of rather less than the average size, being only 3 feet 9 inches

long, 1 foot 3 inches in diameter at the narrow end, and 1 foot 6 inches at the outer end. Its iron pin is 4 inches long and  $1\frac{1}{4}$  inch in diameter.

*Kirkton of Tyrie.*—A similar roller stone lies in a neglected condition near the farm of Kirkton of Tyrie, and there was until recently one also at Templand, Auchterless, but the latter has now disappeared. Indeed, very few of the roller type of whin-mill now remain. They appear never to have been numerous, and were ultimately superseded by a more efficient form now to be described. Besides, the roller whin-mill, when it ceased to be used for its original purpose, could easily be reduced to a uniform diameter from end to end, and thus begin a new sphere of usefulness as an ordinary field roller.

#### V. THE WHEEL OR GRINDSTONE-SHAPED WHIN-MILL.

This form of whin-mill, if we judge by the numbers that still remain, must have been in much more frequent use than the roller type just described. There are at least half a dozen to be found for every one of the roller type now in existence, and the records of destroyed examples tell the same tale. This is not surprising, however, for the grindstone type did its work more rapidly and effectively than the other, since its crushing power was concentrated on a smaller space. Like the roller form, it consisted essentially of two parts: the crushing stone and the course round which it revolved, but each of these parts differed considerably from the type already described. The crushing stone, as is seen in the accompanying illustrations, was like a large grindstone standing on its edge, so as to revolve like a wheel with a fixed axle. The size varied somewhat, but was usually about 4 feet in diameter, with a thickness of one foot or a little more. The centre of the stone was pierced by a hole, sometimes round, sometimes square, and having a diameter of about 8 or 9 inches. Through this central hole there passed a shaft or axle which was firmly wedged into the stone so that both revolved together. The shaft was usually about 14 feet in length, and the crushing stone was fixed about 10 feet from its inner end and about 4 feet from the outer one, to which the horse employed in driving the mill was harnessed. The inner end of the shaft was attached by means of a swivel to an iron pin fixed firmly in a block of stone, which was sunk a foot or two into the ground to enable it to stand the great strain placed upon it when the mill was in operation.

The course round which the mill-stone revolved also differed from that already described. In the roller type the course was flat, but in the grindstone type there was a groove or trough running round the

course, in which the crushing stone travelled. The bottom and sides of this groove were lined with slabs of flat stone to offer a firm crushing bed. In this space the whin shoots were placed, the horse was harnessed to the outer end of the shaft, and operations commenced. The man in charge of the work was supplied with a watering-can or "rooser," a local term surviving from the French *arrosoir*, and with this he occasionally sprinkled the whins to soften them and make them more easily crushed. The time required for pulping varied somewhat according to the weight of the crusher and the age of the shoots, but about an hour and a half was usually enough to reduce them to a condition in which the cattle could eat them with safety and relish.

*Whitelums, Gartly.*—One of the best known examples of this class of whin-mill is to be seen at the farm of Whitelums, near Gartly Railway Station, about five miles south of Huntly. It is close to the main road, and thus attracts the attention of many travellers. The circular stone has a diameter of 4 feet 2 inches and a thickness of 1 foot. The shaft, of the usual dimensions, is still in place, and the apparatus looks as if it were ready to be used at any time. But this appearance is deceptive: the wood of the shaft is decaying, and the stones with which the grooved course was originally lined have been removed for building purposes, though the groove itself still remains apparently complete.

*Skatebrae, near Badenscoth.*—A much better example is to be found at the farm of Skatebrae, but, as it is not visible from the main road, it is not so well known as that at Whitelums. The Skatebrae example (fig. 3) is of red sandstone, 4 feet 4 inches in diameter and 1 foot 2 inches thick, the circular hole in the centre being made to fit a shaft 9 inches in diameter. The shaft or axle is 14 feet long, the revolving stone being wedged 10 feet from its inner end and 4 feet from its outer one. The course is 15 feet in diameter, and the stone-lined groove into which the whins were placed is 1 foot 10 inches wide and 1 foot deep. The iron pin to which the inner end of the shaft was attached is 6 inches high, and is firmly bedded into a large stone 8 inches in diameter and rising 10 inches above the ground level. This whin-mill was in regular use till about 1890, and is still occasionally worked. In the spring of 1910 it was used for crushing a supply of whins for the farm horses in order to rid them of worms, crushed whins being regarded as a specific for that purpose. It was formerly the custom for neighbouring farmers not having a mill of their own to bring their whin shoots to Skatebrae, where a small charge was made for the use of the mill.

*Bogside, Premnay.*—The whin-mill here is made of grey granite. It is 4 feet 7 inches in diameter and 1 foot 1 inch thick, the shaft hole



which passes through its centre being 1 foot square. The diameter of the course is 22 feet, and the pivot stone in its centre is 1 foot square, and rises 14 inches above the surface of the ground. The iron pin embedded in this stone is 8 inches high and about an inch thick. The circular groove in which the mill-stone revolved is 1 foot 9 inches wide, and is at present 8 inches deep, but as the bottom is overgrown with grass sods its original depth must have been somewhat greater.

*Burrels, Premnay.*—This farm is also known as West Side of Premnay. It contains the remains of a whin-mill of peculiar construction, inasmuch as it possessed two circular stones, a large and a small one, and it is



Fig. 3. Whin-mill in working order at Skatebrae, Auchterless.

the only example known to me where such a contrivance had been adopted. The larger stone (fig. 4) is 3 feet in diameter at one side, increasing to 3 feet 3 inches at the other, and the shaft hole in the centre is 7 inches square. The pivot stone has been removed from its original position, and now lies fully exposed to view. It is 4 feet in length, and varies from 1 foot to 1 foot 10 inches in thickness. To give it power to resist the lateral pressure put upon it when the mill was working, it had been sunk to a depth of 3 feet in the soil, leaving only the upper foot exposed. The iron pin embedded in its upper surface is  $6\frac{1}{2}$  inches long and 1 inch thick. The smaller stone has a diameter of only 2 feet and a thickness of  $10\frac{1}{2}$  inches, its central hole being 7 inches square, so as to fit the same shaft as the larger stone. It was placed on the shaft when it was necessary to give additional weight

to the larger stone in order to hasten the pulping operations. This whin-mill was put to considerable use in 1868, that being a dry year, when the crop was a short one and fodder for the cattle was scarce.

*Knowhead, Pitmathen, Oyne.*—At this farm there is a crusher stone of grey granite with a diameter of 4 feet and a thickness of 1 foot. The central shaft passage is 7 inches in diameter, but the whole apparatus is lying derelict.

*Broomend, Kintore,* has a mill-stone of reddish granite, 4 feet 3 inches in diameter and 13 inches thick, the hole for the passage of the shaft through its centre being 8 inches square. This stone was



Fig. 4. Grindstone type of Crusher of Whin-mill, and Central Stone, at Burrels, Premnay.

used by my father-in-law, the late Mr Smith, farmer at Broomend previous to the erection of the Paper Mills there in 1858, and was afterwards employed for crushing lime used in the building operations. Since then it has been lying useless near the old farm-steading, the course having been destroyed.

*Menie.*—At the home farm of Menie, near Belhelvie, within a short distance of the sea-coast, there is a whin-mill stone of grey granite having a diameter of 3 feet 11 inches and a thickness of 1 foot 4 inches. The central shaft passage is 9½ inches square. The iron pin to which the shaft was attached is 18 inches long and 1½ inch thick. From this central pin to the inner circumference of the course is 2 feet 10 inches, and the course itself is 2 feet 3 inches wide, so that the total distance across is 5 feet 1 inch. Round the exterior circumference of this course

there is a paved platform 8 feet wide, on which the animal that supplied the motive power travelled. Thus the full width is 13 feet 1 inch and the total diameter 26 feet 2 inches, being several feet wider than the average course. The outer edge of the mill-stone has been much worn by friction against the side of the course.

*Tombeq, Monymusk.*—Both the whin-mill and the course at this farm are in existence, but not in working order, the stone having been removed from its place and dumped down near the farm buildings. It is 4 feet in diameter and 1 foot thick, the central hole being 10 inches square. The course measures 22 feet 8 inches in diameter, and its central pin  $6\frac{1}{2}$  inches high. The groove in which the mill-stone moved is 15 inches wide and 18 inches deep.

*Castle Fraser.*—At the farm of Backhill, Castle Fraser, about two miles from Kemnay Railway Station, a mill-stone of reddish granite lies at the roadside. The stone is 1 foot 4 inches thick, the diameter of the inner circumference being 3 feet 8 inches, gradually increasing to 4 feet 2 inches at the outer one. The central shaft hole is of a rectangular shape, being  $7\frac{1}{2}$  inches along one side and  $8\frac{1}{2}$  inches along the other. The course has been destroyed.

*Easter Skene.*—Lying at the roadside, near the gate of Easter Skene, there is a grey granite mill-stone rather under the average size. It measures only 2 feet 10 inches in diameter and  $11\frac{1}{2}$  inches in circumference. Its original site is unknown, but it was used by Mr M'Combie, the well-known cattle breeder, many years ago, to pack tightly the stones which he used in the formation of the stone drains on his farm. So efficiently was this work done that these drains are still in good working order.

*Bandodde, near Midmar.*—A whin-mill stone of grey granite, 3 feet 9 inches in diameter and 1 foot 3 inches thick, is to be seen lying at the roadside on this farm. The central hole for the shaft is 7 inches square. Though now lying useless and neglected, this mill has done good service in its day, as is shown by the worn edges of the stone. Whins were formerly plentiful on the waste ground in the vicinity of the farm, and several of the tenants took advantage of this, and so were able to keep a larger stock of cattle on the farm than would otherwise have been possible. Indeed, it is said that in later times the tenant was sometimes able to sell part of his turnip crop, and supply its place with whin fodder, upon which the cattle thrive exceedingly well. But labour became more expensive, and a time at last came when the cost of preparing the whins on the farm exceeded the advantage to be gained by using them. They then dropped out of use, and the whin-mill was dismantled and the crusher stone thrown aside, where it now lies.

*Comers, near Midmar.*—In the garden of the merchant's shop at Comers, occupied by Mr Diack, there is preserved a small whin-mill stone of grey granite, 2 feet 6 inches in diameter and 9 inches thick. The shaft hole is circular, and measures 6 inches in diameter. This stone was removed to its present site from the neighbouring farm of Woodhead.

*Upper Broomhill.*—At this farm, which lies to the north of the main road, about half-way between Bandodle and Craigievar Castle, there is a whin-mill stone of reddish granite similar to that found on Corrennie Hill, in the immediate neighbourhood. The crusher stone has a diameter of 3 feet 10 inches, and is 10 inches thick. The shaft hole is  $7\frac{1}{2}$  inches square. This mill has been dismantled and the course destroyed.

*Glacks of Culmellie.*—This small farm is situated to the south of Callievar Hill, about five miles north-west of Craigievar Castle. Lying on the inner side of the hedge in a field close to the farm buildings there is a whin-mill crusher stone, the only portion of the apparatus now remaining, the rest having been destroyed many years ago. The tenant of the farm, a widow, who died several years ago at a ripe old age, told me an interesting reminiscence of her youth. She had received the present of a couple of lambs whose mother had died, and which the farmer found himself unable to rear. She gladly accepted the gift, and did her best to rear them successfully. This was comparatively easy as long as the summer lasted and she could get a supply of food for them by cutting grass at the roadside. But, when winter came on, this supply failed her, and she was in difficulties till she asked the advice of the veterinary surgeon. He recommended her to feed them on crushed whins, and upon this she brought them successfully through the winter and spring. Next summer she sold them at a good price, and the money she received proved very useful in helping to buy her wedding outfit.

*Balnakelly, Cushnie,* lies about two miles south of Glacks of Culmellie. The farm possesses a whin-mill stone and course, but the apparatus is not in working order, and the axle-shaft has disappeared. The crushing stone is of red granite, and is only 3 feet in diameter and 1 foot thick. The shaft hole is 6 inches in diameter. The course has a diameter of 19 feet, and the central iron pin is 1 foot 6 inches high.

*Kildrummy Quarries* are situated fully a mile north of the ancient and well-known Castle of Kildrummy, on Donside, about ten miles west of Alford. A whin-mill crusher stone is used at them as an anchor, to which is fastened a guy rope attached to a crane employed in lifting the stones in the quarry. It is at present hidden from sight by a large quantity of stone chips, so that its dimensions cannot be given.

*Glenkindy House, Donside.*—Just inside an iron railing, beside the pathway near the stables at Glenkindy House, the crushing stone of a whin-mill may be seen. It is of reddish granite, 4 feet 4 inches in diameter and 11 inches thick, and is pierced by a circular hole 8 inches in diameter. Nothing of the original apparatus, except this stone, now remains, the shaft has disappeared, and the course has been broken up.

*Balbridie.*—This farm is situated on the side of the South Deeside Road, about half-way between the Parish Church of Durris and Banchory-Ternan, and two miles south of the railway station at Crathes. It possesses one of the most massive crushing stones of the wheel or grindstone type now in existence; but, unfortunately, the apparatus has been dismantled, and the stone lies useless close to the farm-steading. The crushing stone measures 4 feet 2 inches in diameter at its outer side and a few inches less at the inner one, this being required to allow it to revolve round the course with level pressure. The stone is 1 foot 8 inches thick, and is therefore heavier than such stones usually are. Its central shaft hole has a diameter of 10 inches, this large size being required for the passage of an axle strong enough to move the stone without danger of the strain causing the wood to snap.

*Tillyching, Lumphanan.*—The farm-steading of Tillyching is situated about a mile east of Lumphanan, and a short distance north of the railway. It possesses a whin-mill of the grindstone type, but the apparatus has been neglected, and is not now in working order. The mill-stone is of reddish granite, 4 feet in diameter and 1 foot 7 inches thick, and is pierced by a round shaft hole 8 inches in diameter.

*Brankholm, Lumphanan.*—This place lies about two miles west of Lumphanan Railway Station, and possesses a whin-mill in a complete condition, though the woodwork connected with it is decaying. The crushing stone is of reddish granite, 3 feet 8 inches in diameter and 1 foot 3 inches thick. The shaft passes through a central space 9 inches in diameter, and is correspondingly thick. The course measures 16 feet in diameter, and the groove in which the whins were placed is 2 feet wide and slightly less in depth. Though the apparatus is complete, it has not been in use for many years, and it is doubtful if the wooden shaft, owing to its long exposure to the weather, would now stand the strain of working.

*Wester Roseburn, near Dess.*—This farm is about a mile west of the railway station at Dess, and the whin-mill stands only a short distance north of the railway, from which it is plainly visible. The apparatus is almost complete. The crusher stone is of unusually large size, being 5 feet in diameter and 1 foot 2 inches thick. The central shaft space

is 10 inches square, as a thick, strong axle was needed to move such a heavy stone with safety. The course is 21 feet in diameter, and the groove round which the mill-stone moved is 2 feet wide and 1 foot deep. The central iron pin is 1 foot 6 inches high. This apparatus was formerly used for crushing the lime used in building the neighbouring railway viaduct, and when that work was completed it was purchased for a small sum by the tenant of Wester Roseburn. He removed it to the farm, and re-erected it there, for the purpose of crushing whins, but it did not prove so good a bargain as he anticipated, for it was found difficult to work; so it has not been used for many years.

*North Behenties, Leochel-Cushnie.*—The whin-mill formerly used at this farm has now been broken up, the course destroyed, and the crushing stone removed. It is now used as the centre piece of the threshing-mill course.

*Shevado.*—There is a very good example of a whin-mill at the farm of Shevado, about a mile south of Brucklay Castle and three miles north of New Deer. It was originally employed in the neighbourhood of New Aberdour, from which district it was brought by Mr Dingwall Fordyce, and re-erected on his farm at Shevado. The central pivot-pin, shaft, and crushing stone are complete and in good order, but the course is wanting. The apparatus is of the usual dimensions, but is now regarded more as a curiosity than as a useful farm implement.

I am informed by Mr J. Graham Callander that, in 1908, he saw a stone of the grindstone type lying at the spot marked "Old Windmill" on the Ordnance Survey map, about 250 yards north-west of the farmstead of Mains, Boyndlie, in the parish of Tyrie. The error on the map has doubtlessly arisen through the confusion of the word "whin-mill" with "wind-mill" by a surveyor who was familiar with the latter only.

There are, or were till recently, remains of whin-mills at Hill of Fetternear; Wellside, Auchleven; Mains of Leslie; Little Whitecross, Chapel of Garioch; Scurdarg, near Gartly; Waulkmill, near Parkhill Railway Station; Waterside of Inverebrie; and Frosty Nib, about three miles from Strichen; but as they are all of a construction similar to those already described, it seems unnecessary to give further details concerning them. From *Scottish Notes and Queries*, April 1925, p. 72, I am enabled to add the following examples to my list:—One at Berryhill, Memsie, parish of Rathen; a fragment of one built into the back wall of a house in the village of Strichen; another at the roadside near the farm of Bogenjohn, and one built into a dyke at Bransbog, both in the parish of Strichen; and one at Mains of Whitehills, New Deer. Dr W. Douglas Simpson also has drawn my attention to one, 3 feet

3½ inches in diameter and 6 inches thick, lying against the inside of the south wall of the Kirkyard of Essie, and to another of rather larger size at Glack of Essie, the latter having been used in quite recent times. Doubtless others are lying in out-of-the-way places, neglected and forgotten, and so have escaped notice, while many others have been broken up for building purposes. Still, the numbers that have been traced are sufficient to show how extensively these whin-mills were used once upon a time in Aberdeenshire. It must not be supposed, however, that their use was confined to times of scarcity. Though the hardships of famine years led to the adoption of whins as cattle food, it was soon found that they could be profitably used in ordinary seasons also. They were generally believed to have about double the food value of an equal weight of turnips, they cost the farmer nothing beyond the labour needed to cut and pulp them, and they enabled him to keep an extra stirk or two on his farm—a welcome addition to his often scanty property. Children, moreover, left school at an early age, and the crofter could, both profitably and cheaply, employ his family to assist him in working the croft, till they were ready to go out to ordinary farm service.

#### VI. CAUSES OF THE DISUSE OF WHINS AS CATTLE FOOD.

Times changed. Improved methods of farming, a proper rotation of crops, and the extensive use of lime and artificial manures, so increased the fertility of the soil that a much greater supply of cattle food could be grown and stored for use in winter and spring, and thus the advantage of using whins became less. At the same time, farm-servants' wages rose and labour generally became more expensive, so that the cost of preparing the whins came at last to exceed their food value, and they gradually dropped out of use. This economic change occurred, not only at Bandodle, as already mentioned, but all over Aberdeenshire, and few farmers of the present day have had any experience of preparing whins for cattle food. Nor does it seem probable that they should again be used as extensively as formerly, since much of the waste land on which they grew has been brought under cultivation. But if such an unlikely event should ever come to pass, one may be sure that the old forms of whin-mill will not be employed, but that more compact, efficient, and labour-saving machinery will be used in pulping the whin shoots.