

BETWEEN CARRON AND AVON: THE GRANGEMOUTH AREA SINCE 1600

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Introduction

Writing in 1723, Johnstoun of Kirkland described the view north from Falkirk. The Carron was a meandering, tidal river whilst the fertile carse was one of the pleasantest views in Scotland ¹. That vista today is dominated by Grangemouth with its modern industries. This paper presents a study of that area since about 1600. It concentrates on the coastal zone from the mouth of the Carron to the Avon, from Heuk to Bearcrofts on Plan 2. But, to put change there into context, it will necessarily look further afield. A detailed study of the agricultural scene familiar to Johnstoun is followed by a less detailed examination of the progress of industrialisation, the early growth of Grangemouth and the most recent transformations brought about by large-scale modern industries ².

Sea Walls and Flood Defences in the Pre-Industrial Era

Roy's map (Plan 1) shows the area as surveyed in the mid 18th century. The Carron, Avon and Grange Burn are all tidal and meandering, much wider than today. The Carron enters the Forth about 1 km north of its present mouth. There is a string of farms between the mouths of Carron and Avon and, between those farms and the Forth, Roy shows a double line with



sharp angles and turns, clearly intended to indicate a sea wall. The Kinneil shoreline is an equally unnatural smooth, crescentic sweep.

There is evidence for extensive embankment along the tidal Forth and its tributaries in the 17th century. The late 18th century Old Statistical Account refers to a sea wall of unknown antiquity at Ferriton, below Clackmannan³. The manuscript version of Roy's map (not illustrated) shows a sea wall in that area, similar to the one between Carron and Avon. A tack* of 1636 obliged the tenants of Ferriton to concur in

Repayrying and re-edifieing of the hale sea dykes demolished be Invadations of Walter and sail menteyne the same in as gud estait as they have bene thay yens bypast⁴.

Sibbald mentions dykes in discussing of the area 'betwixt the Water of Carron & Avon' but may only refer to dykes on the lesser rivers. In 1667, the Justices of the Peace for Stirlingshire determined to build dykes to prevent the sea spoiling the highways below Falkirk - though it is not clear if anything was done⁵. There is archaeological evidence of 17th century reclamation from the sea at Airth. A tack for a notably long 42 years at Airth and dated 1696 required the tenant to maintain the sea walls - without saying that these were either new or old. Duncan Johnstone, who farmed at Foulterhaich of Ebbishaugh, Falkirk parish and died about 1643, owed rent for 'fodder foulzie in sie dykis'. John Calender's 1662 tack of West Kerse obliged him to maintain the old sea dykes and replace them if needed. A disposition of 1744 refers to the Water Dykelands of Heuk and 6 acres of Saltcoats surrounded with a water-dyke. In a 1760 tack for Powdrake the landlord engaged to provide stones which the tenant was to cart and use 'to defend the sea-dykes'. And at Kinneil a 1697 tack required the tenant 'to keep the tide thereof'⁶.

So, it seems that sea dykes were widespread along the 17th century Forth. At Airth, mud flats had been reclaimed; elsewhere, sea walls may have been built on salt marsh, reclaiming arable land to landward. There is no evidence of when or how they were first built. Sibbald and the Clackmannan OSA emphasise their fragility and this is underscored by the need for repairs by the tenants though the 1760 record of re-enforcement with stones may represent real change. Sea walls were troublesome, expensive and unusual. Did they protect a particularly valuable agricultural area?

Agriculture from 1600 to 1720

Traditional accounts of Scotland's agricultural development emphasised the importance of the so-called Agricultural Revolution of the late 18th and early 19th century. Farming, it was argued, was rapidly transformed from a backward, near static peasant subsistence into a modern market-oriented and highly productive endeavour. One of the novel features of that 'revolution' was extensive reclamation of arable from muir, marsh or sea. A

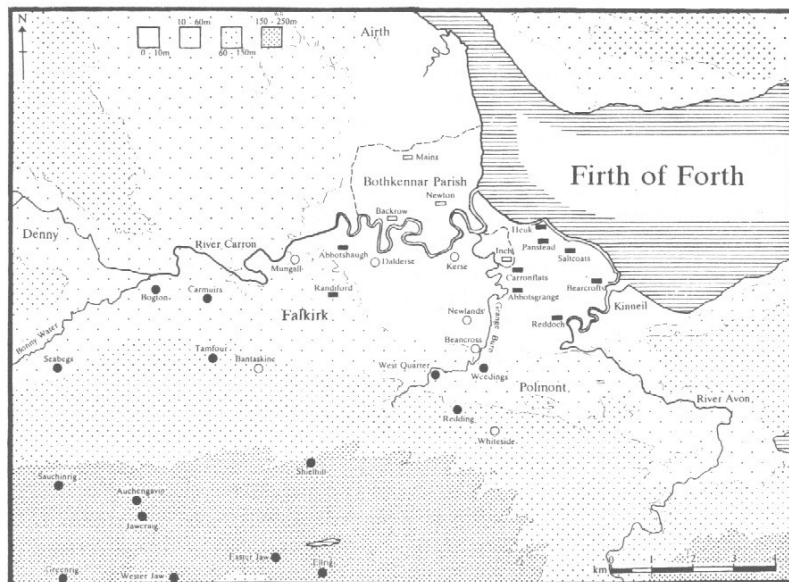
* Tack: lease.

more nuanced view now prevails. Whilst the rate and scale of change in the late 18th and early 19th century was impressive and brought about unprecedented increases in production, change emerged from a situation which was more varied, more progressive and often more productive than was earlier thought⁷.

Failing a good run of estate papers, the Stirlingshire Sheriff Register of Deeds yielded a modest selection of tacks and the testaments of local farmers provided a wealth of detailed information (Plan 2)⁸.

Many 17th century testaments provide a comprehensive list of assets and liabilities at the time of death. Unlike leases and rentals, which state what might to happen, the testament indicates what did happen. However, they survive only for a minority of people and provide only a snapshot view of a particular moment - which may not be typical of an entire life. They do not record 'real estate' such as land and houses, but only 'moveable' property. But for agricultural tenants 'movables' included farm stock - both animals and crops; leases and rentals rarely mention livestock in arable areas. But, for technical, legal reasons testaments may not record all the movables and after the end of the 17th century, local testaments rarely include useful agricultural information. Nonetheless, from around 1620 to around 1690, they are invaluable.

Individual testaments can provide a cornucopia of illuminating detail. Hearcrofts was a large farm just north of the Avon occupied by a succession



Plan 2. Some farm sites in the Grangemouth area 1600-1750.

of substantial tenants. Thomas Boog's wife died there in February 1639 when, Boog declared, the couple had the following livestock: 11 horses and mares, worth £20 Scots* each; 2 one year old foals, worth £8 each; 6 oxen, worth £20 each; 6 in-calf cows, worth £12 each; 4 stots, two years old, worth £6 13s 4d each; 6 stots, one year old, worth £4 each; 43 sheep, young and old, worth £2 each.

The adult horses and oxen were draught animals and they had 17 at a time when few farms elsewhere had more than two or three horses and one or two oxen; this was their motive power, assistance with the drudgery of working the land without machines. The foals are potential replacements or might be sold once they were older. The year-old stots are last year's calves. Two-year old stots are more valuable than one-year olds but still not nearly so valuable as adult, in-calf cows. In the spring, lambs would augment the sizeable flock of sheep and the cows would calve.

In the barn and barnyard they also had: 40 bolls* of bere* barley, threshed and unthreshed, worth £226; 136 bolls beans, threshed and unthreshed, worth £634; 26 bolls white oats, price illegible; 64 bolls outfield oats, price illegible. And they had utensils worth a humble £26. As the total value of this inventory was £1910 we can calculate that, between them, the white and outfield oats were worth £553, averaging just over £6 the boll. This was probably not their full production for the previous year. By February, some would have been consumed, sold or otherwise disposed of. But clearly grains (valued at £1393) overshadow the value of the livestock at £566. White oats was a high-yielding variety, requiring good soil, heavy manuring and a mild climate; the presence of outfield oats implies that some of the land was not sown to arable every year but was cropped only intermittently. The most striking feature of the grain stock is the presence of a large quantity of beans, approaching half the total grain recorded. To complete the couple's assets, they were owed a substantial £400.

But there were also liabilities. First, the rent for the previous year 'for the half lands of Bearcrofts', was £433 cash with 30% bolls of bere barley and 330 bolls of beans. Sale of most of the rest of the beans would just cover the cash portion of the rent, though completing the threshing would involve costs. And they owed another £666 to other people. At the end of the balancing operation, they had £373 to call their own.

Taking a wider view, testaments suggest that there were four agricultural zones in the Falkirk area in the 17th century. In the southern and western parts, which we will call Zone 1, peas and beans are not mentioned in a sample of 44 testaments from 15 sites. Typically, these farms had ten times more oats than bere and sometimes the ratio was even higher. Jonet MacAndrew, who died at Wester Jaw about 1667, had 20 bolls oats and only one of bere, whilst Jeills Leishman, who died at Elrig in 1661, had sown 5 bolls of oats and only half a boll of bere, expecting a two fold return on oats

*£ Scots: in the 17thC £1 Sterling was 12 Scots.

*Boll: grain measure of about 50 kg.

*Bere: a hardy form of barley.

and three-fold on bere. And, again typical for Zone 1, each of these had only one horse. George Russell in Wester Jaw died in 1665 and had the largest quantities of grains recorded 11 (mi this zone, 50 bolls oats and 50 bolls bere barley - he also had 3 horses and in,ires and 8 cows with some young stock. But he does not seem to have grown Illumes.

Individually, these testaments might be only partial listings or might be unrepresentative; but in aggregate they tell such a consistent tale that it must describe the usual modes of farming in Zone 1. There was no white oats here but hardier, less demanding and less productive varieties called brockit oats, outfield oats, gray oats or black muirland oats. Quantities sown were small; returns were never estimated at above three to one and were more often only two to one. Unpaid wages, listed amongst the liabilities, indicate that these farms rarely employed as many as three paid workers. Rents were sometimes as low as £25 per year and seldom more than £60; they were payable in cash without any grain component. We have no positive local evidence about how rotations were organised; probably the bere barley got most of the manure, whilst land exhausted by the serial growing of oats would then be left for several years till it recovered.

This pattern is typical of more traditional mixed farming areas and approaches the pattern once thought to be typical of almost all 17th century Scotland. Much of the grain would be used on the farm, for human and animal feed, though a surplus might be sold in good years. Other products would include meat, wool, milk, butter and cheese. From time to time surplus stock would be sold. Overall productivity was low. Doubtless some supplemented farming with other work, for example mining, quarrying, spinning and weaving, all recorded from this area.

Zone 2 agriculture was found (roughly) between the fertile northern fringe of the area and the poorer ground to the south and west. Five of the farms were on the carselands, two on the lower hills. At two sites, Whiteside (Whyte, 1631 and Stirling, 1664) and Bantaskine (Marshall, 1668) some testaments were of Zone 1 type. But James Mitchell at Whiteside had two stacks of brockit oats, 32 bolls of oats, one stack of white oats, a stack of bere barley and two 'racks' of peas. Peas formed only a tiny part of his production. But he owed a substantial rent, including £100 cash with 16 bolls bere and 8 bolls oatmeal; and he grew some white oats, the variety typical of better land.

Seven sites, covered by 31 testaments, were assigned to Zone 2. Farms were assigned to this zone if legumes were sometimes present but usually at less than 20 % of production; the proportion was often considerably less than this. At Dalderse, one case where they form 22 % of production must be set against several others from this small estate where they form under 10 %. White oats were often recorded but outfield oats was usually the most important single crop and black oats appears on one occasion, at Kerse in 1639. The ratio of oats to bere was generally narrower than in Zone 1, usually between 2:1 and 5:1. Numbers of draught animals were higher here than in Zone 1.

Zone 3 was concentrated along the coast between Carron and Avon with outliers inland at Randiford and Abbotshaugh. Thirty-five testaments provided usable information derived from 9 sites. The size of holdings varied and not all testaments provide equal detail. But the Boog/Baird testament was typical in the emphasis on arable and in the importance of legumes William Boog, the couple's son, died 12 years later; he and his father were both tenants in Bearcrofts. William was a married man with a young son. He and his wife had owned eight horses, two oxen and five cows with their calves. In the spring before he died they had sown 78 bolls of white oats, from which a three-fold return was anticipated, seven bolls bere barley, for which a four-fold return was forecast, 24 bolls outfield oats, promising only a two-fold return and 24 bolls beans, expected to yield three-fold.

All but two of the testaments from this zone show 20 % or more of the grain sown or harvested to be beans and/or peas. Returns of two to one are recorded for outfield oats, which was sometimes, even here, the largest single crop - but threefold returns were otherwise usual and bere barley sometimes produced a fourfold return. White oats was widely grown and, on these farms, gray and black oats were never recorded. Most had from four to eight adult horses and two oxen but, as we have seen, some had more draught animals than this whilst smaller farms (indicated by smaller rents and lower quantities of planting) obviously had fewer. Young stock and sheep are recorded from almost all sites. Many Zone 3 lists enumerate from five to eight farm servants both men and women, some owed harvest wages but most full-time workers owed six months or a year's wages. If we assume the tenant family to comprise a conservative average of two adults and two children, some of these farms were supporting as many as a dozen people.

The most sophisticated agriculture was to be found in Bothkennar parish (Zone 4). Thirteen testaments from Bothkennar cannot be localised to a specific site; only two of these do not mention legumes as a significant part of the produce. Twelve derive from defined areas of the parish with two from Backraw, four from Mains and six from Newton; all these include peas and beans as 20 % or more of total production. But, in addition, many Bothkennar testaments record wheat crops, which had been grown here from as early as the 14th century. It was a luxury, sold to make wheat bread⁹.

Peas and beans were grown to maturity, dried and sold as food for a growing urban population unable to afford animal protein. They imply the use of lime to reduce the acidity of the soil with the further benefit of making heavy clay soils easier to work. And whilst the mechanisms were not understood it was known that both liming and legumes increased the yield of subsequent crops. Lime also assists to remove salt from land reclaimed from the sea. We have seen that legumes were present. What of liming? For direct evidence we must turn to tacks - which also yield other valuable information.

The Sheriff Register of Deeds (checked to 1725) yielded some 30 tacks from the Falkirk area dated from 1661 to 1721. Only three are from Zone 1 with two from Redding (1699 and 1708), one from Jawcraig (1722). They are consistent

with the pattern of small farms with modest cash rents deduced from the estimentary evidence. The farms were on 19 year leases, as was usual in Stirlingshire by this time; this was long enough for tenants to invest in the long-term future of their farm and at Jawcraig in 1718 the tenant was required to apply 10 bags of lime per year to the arable and only to grow crops on the outfield for three years in a row and then to leave it fallow for a further three. The landlord agreed to pay for the last two years' lime. At Redding in 1708 the tenant was to supply 30 bags of lime per year to his landlord as part of his rent, doubtless from a lime quarry on his land. Presumably he applied lime to his own land. Perhaps, even in Zone 1, we are here picking up the first signs of 'improvement' .

The tacks from Zones 2 to 4 will be considered together. They range from 1661 (at Heuk) to 1720 (at Little Fold of Dalderse). They were usually for 19 years, a few specifying that the lease was renewable for two or even three 19-year terms. Several specify that the landlord will provide assistance with the building of a new house at the beginning of the lease - some were houses of stone and lime, another sign of 'improvement'. All require the tenants to muck and till the ground adequately. Several specify that tenants are not to grow oats twice in a row on the same ground; this was a common prohibition and, surprisingly given the evidence of the testaments, was the only direct reference to crop rotation. Perhaps, where rotation was a well-established tradition, it was simply assumed rather than specified. The payment of rents in diverse grains in specified proportions also forced tenants to rotate. We might assume rotation of bere/ oats! legumes on the infield of Zone 3 with wheat! bere! oats/ legumes in Bothkennar.

Five of the carseland tacks specify that the landlord will supply or pay for lime to be applied to the land, usually at the beginning of the lease. These are all from Zone 2, three from Dalderse (1717a, 1717b, and 1720), one from Kerse (1714) and one from Merryflats (1696). At Dalderse the landlord granted a cash discount from rents for the first two or three years to cover part of the cost of limestone to be laid on the land; at Kerse and Merryflats, the specification is for boats of limestone.

In 16% Thomas Johnstone and his son took over one oxgate of land at Merryflats; a new house was to be built on it, their rent was 13 balls oatmeal, 13 balls bere for five years rising to 14X balls each thereafter with some additional straw, poultry etc; and, for the first two years, they were to buy and lay on the land four boatfuls of limestone, the price of one boatful being deducted from the rent. In 1714, in a tack, which obliged the tenant to pay part of his rent in peas, Hope of Kerse agreed to supply a boatful of lime worth £20 for each of the first three years of the tack at Kerse. the tenant agreeing to lay it on.

There were lime workings in the upland parts of Falkirk and Polmont parishes in the 17th century but these carseland farms clearly relied on 'boat lime' from workings on the south side of the Forth, available since at least the 14th century?". Limestone was calcined in kilns with coal; coal was mined in

the Heuk, Saltcoats and Pansteads area till about the 1630s and was being mined at Quarrelshore (on the Carron) in the later 17th century, if not before. The Carron (and probably the Grange Burn) could be used to transport lime and coal to landward parts of the carse whilst boats which brought lime in could take coal out as a return cargo.

There was, thus, a broad and unsurprising difference between the 'traditional' farming of the upland area and the more progressive, market-orientated farming of the low ground. Liming and legumes were key elements in this progressive agriculture. There was a transitional area between. The evidence cautions against interpreting this as merely a reflection of 'natural' productivity. Altitude, rainfall and poor soil limited productivity of the upland areas but small holdings and lack of capital were also significant. In the later 18th century productivity was vastly increased over much of this upland zone using more advanced methods - and we have seen some signs of this in the form of liming and fallowing even in the early 18th century.

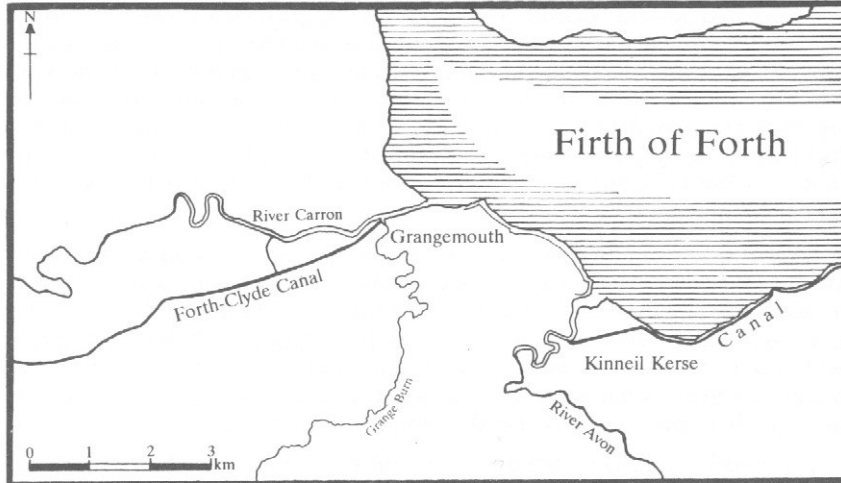
On the low ground, liming, sophisticated cropping and the deployment of large numbers of draught animals were human interventions, the investment protected by expensive sea walls. Estate management was a significant variable. Many farmers in Bothkennar were obliged to grow wheat to fulfill the demands of a Crown charter whilst the Kerse Estate (owners of Kerse itself, Newlands, Beancross and Dalderse) seem to have been less exacting and progressive than owners to the north and west, at least till the early 18th century when evidence for liming appears in the Kerse tacks just quoted. It is likely that Zone 2 generally was advancing towards Zone 3 methods by the early 18th century.

Transport and markets were also vital elements for the more advanced areas. Liming depended on riverine transport. Some grain may have been shipped out directly from the farms. Tacks provide direct evidence of the importance of markets, specifying that grain paid as rent on the low ground was to be carted to markets at Falkirk, Stirling and even Kilsyth. Many tenants in the fertile lowland areas also had business and family contacts in Falkirk, Bo'ness and Linlithgow, where they may have sold some of their own grains.

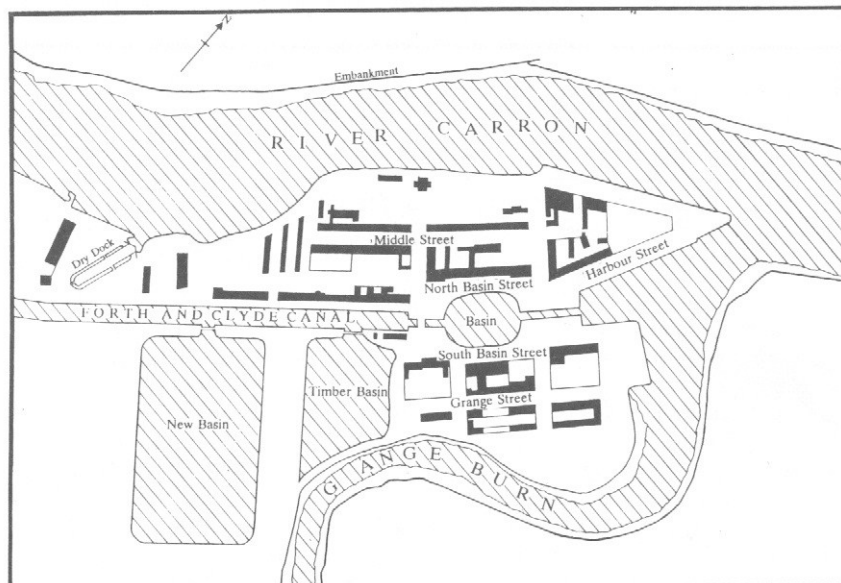
Preliminary investigation suggests that a similar zone of market-orientated, high productivity involving legumes, lime and numerous draught animals was established by the early 17th century north and south of the Forth almost so far up-stream as Stirling. The Grangemouth area in the 17th century was thus part of fertile fringe, focused on the Forth and dependent on it for transport of supplies and produce and protected from its floods by expensive sea walls.

The Early Industrial Period

Pivotal to the future economic growth of the area was the canalisation, re-direction and embankment of the Carron (1768 to 1785) to facilitate access to the Carron Company's wharves at Carronshore. Even more significant was the construction of the Forth-Clyde canal. The initial eastern terminal was a tidal



Plan 3. Canalization—in the later 18th century.

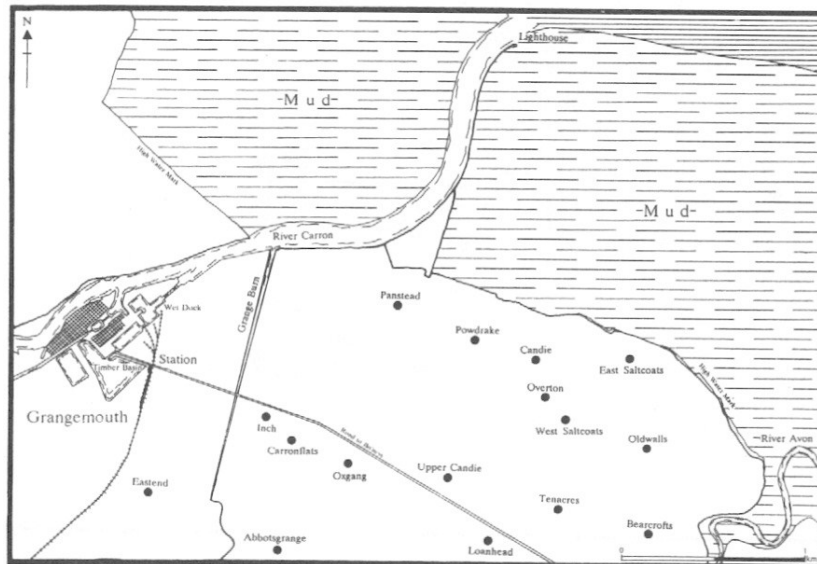


Plan 4. Grangemouth in the early 19th century

harbour at the widened and deepened mouth of the Grange Burn (Plan 3). The canal reached Kirkintilloch by 1773 whilst a cut provided access to Carron Works by 1775; long before the through route opened to the west coast in 1790 a town had begun to develop at the eastern terminus, on the narrow neck of land between the Carron and the canal. Here a mix of residential and business premises accommodated a community, which serviced the canal, and the docks where some goods were trans-shipped. In its early days this town was known as Sea Lock but, well before the end of the century, it had been re-named Grangemouth⁽¹¹⁾.

A canal spur from Bo'ness, across Kinneil Kerse and by a viaduct across the Avon was begun but abandoned due to financial problems and a short section of this aborted canal lies within BP's Kinneil site. The older ports of Bo'ness and to a lesser degree Alloa were now eclipsed by Grangemouth and during the next few decades rapid expansion of the Grangemouth/Falkirk area was mainly driven by exploitation of coal and ironstone and its strategic position on increasingly important internal and international routes¹²¹.

The initial site of Grangemouth was full by about 1800 when expansion moved south of the Grange Burn. Establishment of a customs house (1810), building of a graving dock on the Carron (1811), a link via the Union Canal to Edinburgh (1822) and the establishment of industries secondary to the docks (e.g. sawmills, rope and sail manufacture) all demanded space, put pressure on existing dock facilities and employed more labour (Plan 4).



Plan 5. By 1860 the landscape was being transformed. Note the railway and re-aligned Grange Burn.

Steam ships were deployed on the Forth from 1813 and vessels now became ever larger. The old, tidal harbour on the Grange Burn became manifestly inadequate and a new ship-water dock was constructed. Development of the town moved south of the Grange Burn, which was later re-aligned, outside the urban area (Plan 5).

Some of these changes had a direct impact on local farms. At Dalderse the canal divided fields from their steadings but a bridge was built, the old sea-lykes were replaced and tenants allowed to use the canal to bring in limestone and coal in compensation. By 1760 the tenants of Saltcoats were granted liberty to bring in lime and coal via the new docks at Carronshore. But the canal and Carron Works were themselves indicative of a new commercialism, which had direct effects. Powdrake was newly divided by march ditches around 1760, a new house and steading was built for the tenants and liming was specified in the contract. A scatter of similar evidence has been found for change starting to accelerate around 1760 not just in the Falkirk area but throughout Stirlingshire¹³. Wilson comments on the dramatic changes around Falkirk in the 40 years to 1794 but regarded the previous 14 years as those of the most dramatic transition, detailing the changes on the Callendar estates during those years. He recognised three main agricultural zones in the area: the carse was the best land, there was also 'good land which is not of carse quality' and areas where 'the soil is poor, wet and spongy'¹⁴. The carse yielded good crops of grain and hay on a six-course rotation: fallow/wheat/beans and peas/barley/grass/oats. The few animals kept were either draught animals or for domestic milk production. Improved drainage and the availability of machinery were cited as the major factors in improvement.

By about 1840, there was significant loss of farmland to urban development whilst surviving farms were expanding by amalgamation¹⁵. As elsewhere, larger farms allowed increased capitalisation; contemporary commentators on the area emphasise the importance of iron ploughs, horse-driven threshing machines and more efficient drainage as well as 'improved' breeds of cattle and new strains of seeds in the early 19th century. By the 1840s liming and a six-course rotation were said to be universal on the carselands of east Stirlingshire¹⁶.

From this period on, Estate Plans enrich our view of the farms. Particularly interesting is one of Kerse Estate in 1830 showing fields and the layout of individual farms, with ditches, gardens, orchards and ponds and a stone-faced sea wall. A plan of Bearcrofts in 1847 shows a substantial two-storey, four-roomed house with a dairy at the rear¹⁷. And from this period, too, the windows open a new window onto the area. In 1851, Bearcrofts was inhabited by Robert Walker (farmer, aged 35, unmarried head of household), Mary Bow, dairymaid aged 49 and four other servants, two male, two female. Walker farmed 60 acres in all on a 19-year lease, requiring a six-course rotation¹⁸. The dairy and dairymaid mean more milk cows than was general on the carse - was the farm supplying Grangemouth with milk? James Chapman at Upper Candie in 1851 was another specialist, a market gardener with 8 acres, living with his wife and 7 children in three rooms whilst at Awalls there was and

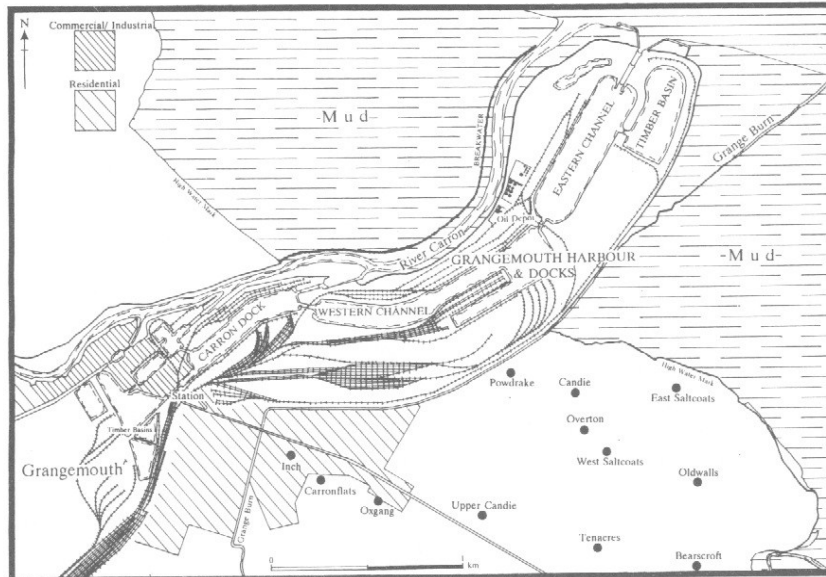
extended family; William Binnie, aged 65 and farmer of 52 acres, was the head of household and lived with his wife aged 67, their daughter, single aged 38, their granddaughter, single and 19 who was a dairymaid, another granddaughter aged 3, a nephew aged 38, single and a land steward and two men servants, a ploughman and a boy. Next door lived a ploughman, John Binnie (presumably their son), his wife, two children and their lodger, Thomas Nimmo aged 25. At Oldwalls there were now two households, one headed by a ploughman but the other by Alexander Frazer, engine smith, living alone in two rooms.

Grangemouth could not keep pace with its expanding population and some people - whether from choice or lack of it - worked in the town but lived in the countryside. There were a porter and a dock labourer at Pansteads, a wright and another dock labourer at Oxgang and so on. There may, of course, have been a counter-movement as some people living in the town came out to work on the farms, to milk the cows on a daily basis, perhaps, or for haymaking and harvest. Large scale, 1st Edition Ordnance Survey maps (surveyed 1860) show a network of paths connecting farms and town, attesting to their close links; each farm is shown with its garden and associated farm buildings. The Ordnance Survey Name Book indicates that all the steadings at this time were of one or two storeys, most were slated but a few were thatched or partially thatched. North Powdrake was in ruins but the others were in good repair.

Railways had proliferated in central Scotland since the 1840s but a line to Grangemouth was not built till 1860, taking over the canal's passenger traffic and most of the freight (Plan 5). The canal was now of minor importance but the port continued to expand. The Carron Dock was excavated in 1882, with direct railway access to the quays, speeding up cargo handling. The town centre now moved southward and the urban area itself continued to expand with streets of tightly packed tenements close to the docks and urban centre whilst rows of more spacious houses and villas marched across the carselands. Access to the port had, hitherto, been via the Carron; in 1906, construction of the Grange Dock allowed direct access from the deep water of the Forth (Plan 6).

This expansion of the urban and industrial area was largely at the expense of farmland but there was also some reclamation. The Grange Dock was a major encroachment onto the estuarine mud-flats; a triangle of land reclaimed from mud east of the expanded docks may have been an accidental result of work on the channel of the Carron and, on a lesser scale, Bearcrofts had gained around 5.6 acres of sea greens.

During the later 19th century potatoes and turnips appear as field crops even on carseland farms, probably pointing to a swing back towards the keeping of livestock. But there is very little information about rotations, Bearcrofts again providing an exception. A note of a lease current around 1895 indicated it now consisted of 119 acres; the rotation was one fallow grass, two wheat, one beans and barley and five gray oats whilst 6 acres of turnips were to be left at the end of the lease¹¹. So legumes were still present though vastly reduced in importance.



Plan 6. Late 19th century: the railway docks and expanding town.

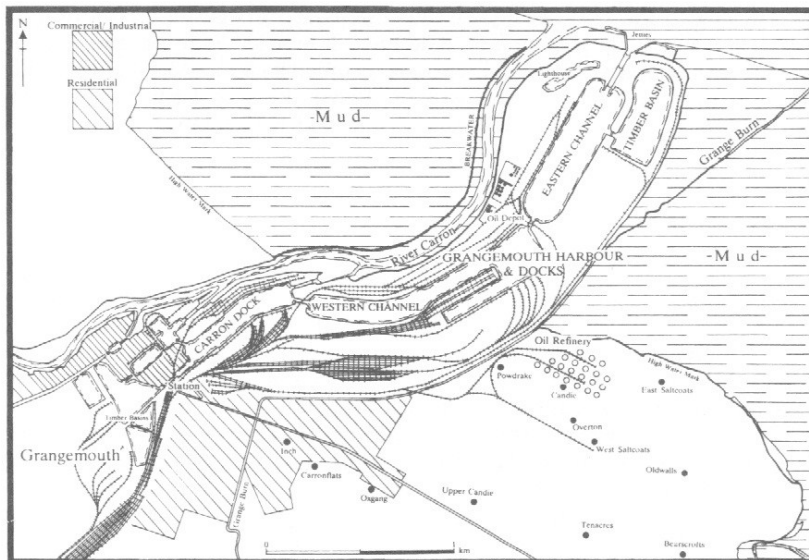
Turning to the 1891 census we find that Bearcrofts is still a farm (Robert Meikle, living with wife, infant daughter, 1 female domestic and 2 male agricultural servants). Overton Farm was occupied by James Marshall, his wife, sister in law and a male farmworker. Powdrake was farmed by a new generation of the Inglis family; the couple had 8 children, the two oldest apparently helping with the farm, and 3 resident male farmworkers. At Upper Candie James Chapman still ran a market garden at age 69, helped by his unmarried adult son. South of Bo'ness Rd, Claret was still a farm but John English at Loanhead was a dairyman.

But there were no more farms. Oldwalls seems to be uninhabited, though the buildings were still standing. At Tenacres there were five houses, some presumably converted farm buildings. The heads of household, however, were 2 dock labourers, a railway carter, a ploughman and a brewer's lorryman whilst William Wilson's son was a general labourer, one daughter was a dairymaid and another a dressmaker. Overtown Cottages, a new building, housed 3 families, two headed by farmworkers, one by a dock labourer; at Awalls the heads of household are a ships plater, a tinsmith and a farm grieve or head man. At 'Old Saltcoats' was a seaman, at Saltcoats a general labourer, at I' instead a dock labourer. Some of these people had working children but few worked on the land. The total acreage of farmland lost to industry was still small; yet clearly it was industry and the port which now dominated the local economy.

Chemicals, Petro-chemicals and 20th century industry

By the early 20th century, Grangemouth was east central Scotland's major port. Main imports were timber and grain. Iron from the Carron Works and other foundries was an important export. During the 19th century chemicals (initially mainly derived from coal) joined this outward flow. James Young had developed his process for the fractional distillation of mineral oils in the mid 19th century, giving rise to the important shale oil industry. However, this soon faced competition from imports of crude oil, at first particularly from the US. As early as 1866 there was a 'massive' refinery in Stirling, processing crude imported from the US via the Forth-Clyde canal²¹. Oil storage facilities at Grangemouth Docks probably date from this period.

In the early 20th century, as the demand for oil products rose, the indigenous industry was in decline; the First World War gave it an artificial lease of life but termination of hostilities signaled the eventual supremacy of imported crude. Grangemouth had particular attractions for the new, large-scale, technical industries of the post-war world, including space for expansion, a good, cheap water supply, good communications by sea and rail, proximity to major cities and a town council eager to attract new industries. These had been potent attractions to Scottish Dyes Limited (later ICI) which arrived in Grangemouth in 1919. They were also important for Scottish Oils Limited (later BP), seeking a site for a Scottish refinery as part of a worldwide expansion. The naval base at Rosyth was a potential customer and, vitally important, the workforce and some of the hardware of

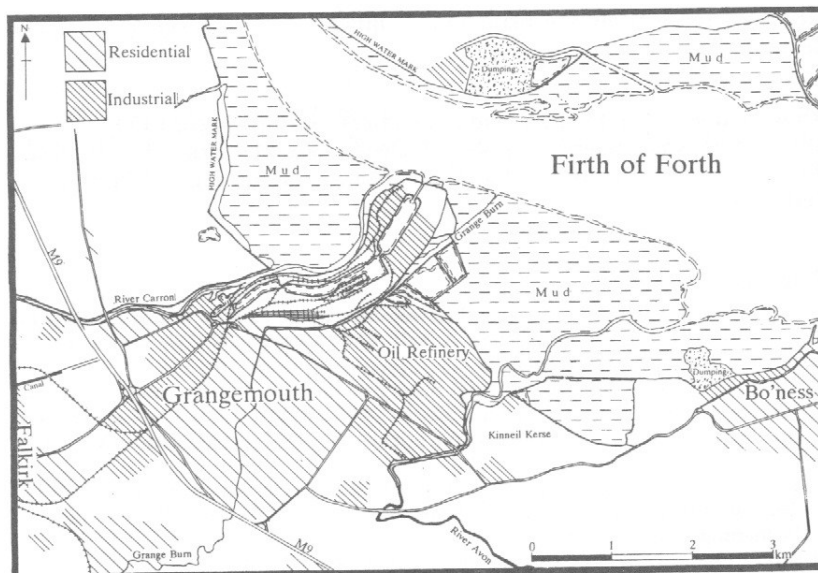


Plan 7. The arrival of the refinery.

the older industries (including a small refinery at Grangemouth) were available too.

Negotiations began with Grangemouth Town Council in 1921 and in 1924 the new plant was in production, a berth for tankers up to 10,000 tonnes being opened at around the same time. To landward, the site was serviced by rail and road links and there was a pipeline link to the older Uphall refinery. Although the company bought all the land north of Bo'ness Road, only the northern end was developed at this stage with 10 tanks of 8,000 tonnes capacity, laboratory facilities and other support (Plan 7). The company built some housing for employees, mainly in the King's Road and Oswald Avenue areas².

During the inter-war years expansion was limited by the depression and was achieved within the existing refinery area. Grangemouth, too, grew only modestly during these years and work at the refinery was suspended at the outbreak of war in 1939, resuming in or shortly after 1945. It was not till 1952 that the new, expanded refinery opened, now occupying the whole land north of Bo'ness Road. Since 1952 changes in oil-based industries worldwide - from the massive increase in car use to the previously unimaginable diversity of products now derived from oil - have had an obvious impact on BP's Grangemouth operation. More specific to the local context have been the development of North Sea oil and gas industries and the options presented by the complex of related industries present in the Grangemouth area for joint ventures and the inter-change of products.



Plan 8. The Grangemouth area today

Other industries were also expanding. From 1963 Grangemouth was designated a growth area, bringing favourable grants and loans for investors, assistance with finding industrial sites and other advantages. Almost 6,000 council houses were built in Grangemouth between 1919 and 1971, the population grew by almost 300 % including a massive 3,340 rise from 1951 to 1961, bringing it to 18,867 an expansion subsequently maintained by the acceptance of 'overspill' population from Glasgow and the traditional industrial areas of the west coast.

Housing and industrial expansion put pressure on space and two poorly documented reclamation schemes have been initiated in the last 50 years. Dumping refuse and spoil between Kinneil and Bo'ness, with the evident intention of reclamation, has been curtailed and has had the paradoxical effect of creating the Kinneil Lagoons, a prime feeding site for waders. Another scheme, south of Grangemouth Docks, has also been only partially completed. The BP complex has expanded to Kinneil and across Bo'ness Road and other industries have spread across the carse towards Falkirk. Meanwhile, pressure on space has been partially relieved by curtailing residential expansion assuming that a car-borne work force can travel some distance to work (Plan 8).

Acknowledgements

I am grateful for financial support for this work from BP Oil Grangemouth Refinery Ltd and for encouragement from Graham Hamilton.

Stephen Digney drew the plans under difficult circumstances and has my deepest gratitude.

Abbreviations for references and appendices: Scottish Record Office (SRO) SRO, Stirlingshire Sheriff Register of Deeds, SC67/49 series, Deeds: SRO, Register of Testaments for the Commissariat of Stirling, CC21/5 series, Testaments.

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Appendices

Appendix 1: Tacks to 1725. Some testaments also include details about tacks.

Abbotsgrange

Tack dated 1719 by William Drummond to Robert Walker, SC67/49/8 f. 296.

Bantaskine

Tack dated 1718 by Mr Michael Livingstone to John Buchanan in Chapelyards of the lands of Chapelyards of Bantaskine, SC67/49/8, f. 218; by the same, dated 1721, to James Millar of Chapelyards of Bantaskine with pendicles, SC67/49/8 f. 302.

Beancorse

Tack dated 1720, by Henry Beg to Thomas Beg, mason at Beancorse, SC67/49/9 f. 161.

Dalderse

Tack dated 1717 by Livingstone of Glentirran to Jean Monteith, relict of John Lorn of Yonderhaugh of Dalderse, SC67/49/9 f. 182: by the same dated 1717 to William Callander and William Crawford, equally, of the Cuttbottom, Littlefold, Pazerfold, East Side and other parts of Dalderse, SC67/49/9 f. 182: by the same, dated 1720, to Thomas Forsyth of Little Fold (and other parts, as above) of Dalderse, SC67/49/9 f. 179.

Heuk

Tack dated 1661 by the Earl of Callander to John Kincaid of lands of Heuk and Oswalds Saltcoats, SC67/49/7 f. 4v.

Jawcraig

Tack dated 1722 by James Kincaid to Jon Aitken of the New Dyke of Jaw Craig, SC67/49/9 f. 152.

Kerse Estate

Tack dated 1692 by Hope of Kerse to Alexander Cunningham of land at West Kerse, SC67/49/4 f 151 v: by the same, dated 1700, to James Lockhart and spouse of 3 oxgates of Wester Powflett of Kerse, SC67/49/4 f. 152v: by the same, dated 1711, to William Hardie, of 25 acres of Kerse, SC67/49/7 f 256: by the same, dated 1714, to William Hardie of the 25 acres of Kerse (above) at a higher rent but with addition of a new house and a boat of limestone yearly for three years, SC67/49/7, f 254: by the same, dated 1696, to Thomas Johnstone in Maryflats and Thomas, his son of one oxgate of Maryflatts, SC67/49/2 f 103r.

Randiford

Tack dated 1684 by Menteith of Randiford to John Callander, of part of Randiford, SC67/49/6 f. 218r: by the same, dated 1684, to James Watt and spouse of part of Randiford, SC67/49/5 f. 37r: by the same, dated 1703, renewing the previous lease to James Watt, on payment of a 'great sum', SC67/49/5 f. 38v: by the same, dated 1703, to John Callander, renewing the previous lease of parts of Randiford, SC67/49/6 f. 217v.

Redding

Tack dated 1708 by Patrick Bellenden of Parkend of Redding to William Learmont, SC67/49/7, f237: dated 1699, by Earl of Callander to James Burn of Blairs of Redding, SC67/49/4 f. 155.

Mains of Bothkenner.

Tack dated 1683 by John Cowie, to John Logan; SC67/49/4 f 27v.

Newton of Bothkennar.

Tack dated 1695 by Wm Bruce of Newton to Alexr Mitchell in Spout of lands of Tennoch and Wester Yard, parts of Newton, SC67/49/3 f. 45r.

Appendix 2: Testaments

All testaments are in the Scottish Record Office, Commissariat of Stirling records. Testaments from rural Falkirk were included only if they were locatable at least to estate level and contained significant agricultural information; later, many of these sites were assigned to Polmont parish.

Falkirk Parish

Abbotsgrange

Lillias Graham, 6th December 1661: John Watt, 14th July 1669: Agnes Smith, 5th May 1674.

Abbotshaugh

James Gudlet, 27th Sept 1651: Bessie Callander, 17th March 1654: William Gibb, 21st March 1656: Janet Morrison, 10th March 1658: Margaret Pinkerton, 10th Jan 1668: Iliom.is Burn, 30th Oct 1671.

John Gray, 22nd Feb 1656: William Callander, 31st July 1663: Margaret Gray, 18th Feb 1676.

Bantaskin

John Marshall, 3rd Jan 1668: Edward Callander, 6th Feb 1679.

Beancross

Alexander Johnstone, 23rd Aug 1661.

Bearcrofts

Patrick Gibb, 23rd June 1630: Christian Baird, 16th March 1639: William Boog, 4th Dec 1641: Agnes Boig, 4th Dec 1661: Bartholomew Morrison, 21st July 1671: Helen Wright, 16th April 1672.

Bogton

James McKie, 5th Dec 1612: Patrick Muirhead, 22nd April 1643: Robert Williamson, 13th Oct 1666: Euphan [Stephen in printed Commissary Index] Jervay, 13th July 1666: AU-x Muirhead, elder, 13th May 1670 & 25th Jan 1671: James Muirhead, 8th Oct 1677.

Carmuir

Jon Livingstone, 7th July 1621: Janet Gilespie, 14th March 1667: Margaret Williamson, 14th Aug 1663: Margaret Aitken, 2nd June 1664: Robert Bachop, 14th Mar 1667: Jean Miller, 5th May 1675: James Hill, 5th Oct 1675: Robert Leishman, 8th Oct 1677: James Leishman, 2nd Dec 1677: John Walker, 13th Nov 1691.

Carronflats

Isobel Kincaid, 21st Aug 1619.

Dalderse

John Galbraith, 15th July 1625: Margaret Kincaid, 27th March 1632: James Johnstone, 5th Nov 1636: Robert Callander, 18th April 1644: Jean Gudlet and Alexander Johnstone 13th Feb 1680.

Elrig

James Forrest, 24th June 1644: Jeals Leishman, 13th July 1664

Greenrig

Margaret Henderson, 2nd Aug 1634: Christian Muirhead, 4th April 1635: Janet Auchie, 28th Feb 1668

Heuk

John Kincaid, 8th March 1671: Alexander Lome, 28th Feb 1673.

Jaw, Easter

Christian Johnston, 16th April 1662: Thomas Fleming, 12th Jan 1666.

Jawcraig

Grissall Russall, 26th Feb 1664: John Russall, 6th Jan 1665.

Jaw, Wester

Janet McAndrew, 1st Jan 1668: George Russell, 1st Jan 1668: Christian Forrest, 5th April 1671.

Kerse

John Sword, 8th Oct 1635: John Young, 20th Jan 1642: Marion Scott, 9th Sept 1643: Margaret Galbraith, 23rd August 1644: David Johnstone, 14th March 1656: John Hardie, 21st March 1656: William Callander, 3rd Nov 1658: Christian Johnstone, 7th March 1662: Charles Lockhart, 17th Dec 1662: Alexander Monteith, 23rd Aug 1663: John Callander, 17th March 1671: Isobel Morison, 14th Feb 1673: John Callander, 3rd Sept 1673: Marion Callander, 8th Oct 1677.

Mungall

Helen Letham, 24th March 1665: John Johnstone, 11th Feb 1667: George Gilmuir, 25th June 1669: John Hardie, 8th Oct 1677.

Newlands

George Johnstone, 27th Jan 1671: James Sword, 27th Dec 1676.

Panstead

John Ronald, 7th July 1621.

Randiford

Alexander Walker, 16th Aug 1672: Elizabeth Scott, 30th April 1680.

Redding

John Blackburn, 28th Feb 1618: Isobel Carnock, 30th Oct 1656: John Heart, 5th May 1675.

Reddoch

Margaret Marshall, 5th Nov 1631: James Mungall, 26th August 1635: Mareon Bruce, 17th Aug 1639: Henry Boog 19th Aug 1643: Marion Crawford, 8th Feb 1664: Janet Wood, 8th Oct 1677: Henry Simpson, 8th Oct 1677: William Bruce, 11th Jan 1679.

Saltcoats

Jon Carslaw, 12th Feb 1635: Janet Monteith, 12th March 1640: Janet Logan, 3rd Nov 1654: Margaret Seller, 4th Oct 1661: Elizabeth Livingstone, 5th August 1681: Robert Gardiner and Helen Ramsay, 7th July 1703.

Sauchinrig

John Boyd, 7th March 1662.

Seabegs

Helen Marshall, 1st June 1668: William Gilmuir, 8th Oct 1669: Thomas Callander, 9th May 1678.

Shielhill

Jonat Russal, 29th March 1617.

Tamfour (=Thomastoun)

Andrew Simpson, 31st May 1676.

Weedings

Margaret Livingstone, 17th June 1612: James Whyte, 9th Dec 1615.

West Quarter

Robert Livingstone, 19th April 1615: Alexander Livingstone, 15th Aug 1627.

Whiteside

Thomas Whyte, 5th Nov 1631: James Stirling, 8th Jan 1664: James Mitchell, 24th June 1664.

Between Canon and Avon 91

Bothkennar Parish

Bothkennar was entirely rural and a more inclusive policy has been adopted than for Falkirk parish. Some testaments were included which could not be located nearer parish level. These appear first:

John Kincaid, 10th July 1613: Alexander Muirhead, 17th Nov 1636: James Simpson, 25th April 1654: John Masterton, 22nd Aug 1654: John Adam, 3rd May 1662: Bessie Burn, 19th Aug, 1664: Janet Callander, 12th Aug 1668; Margaret Simpson, 15th May 1671; Margaret Burn, 9th July 1675: James Taylor, 19th May 1676; Thomas Adam, 11th Aug 1676: Patrick Syme, 4th April 1677: Alexander Simpson, 12th July 1678.

Backrow of Bothkennar

Alexander Burn, 10th July 1668: Janet Bad, 30th May 1671.

Inch

Robert Walker and Elizabeth Johnstone, 23rd July 1673.

Mains of Bothkennar

John Simpson, 5th May 1627: William Westwood, 5th May 1627: Marion Espline, 3rd March 1671: John Cowie, 8th Sept 1674.

Newton of Bothkennar

James Callander, 21st Jan 1632: Janet Simpson, 22nd Jan 1664: John Simpson, 1st June 1664: Janet Burn, 16th May 1672: Janet Wilson, 8th May 1673: John Leishman, 1st Feb 1679.

BOOK REVIEWS (Historical)

Local Past. Peter Joynson of Laraich. pri. print. 270pp. 1996. £17.50.

Contains 32 selections of Aberfoyle area history, anecdote, legend, by a member of a prominent family. They include - Aberfoyle 3000 years ago; Hunting in Menteith; Ledour; Flanders Moss; Cranogs; Kirk of Aberfoyle; the Joynsons and other Loch Ard families; Wartime Aberfoyle. This rich local lore is supplemented by fine appendices, including - the Clan MacGregor; Notes on Rob Roy; Scott's Lady of the Lake; and a Botanical Survey of Din Dhu Oak Wood. Expensive, but innovative, well done, and though some readers may be familiar with much of it, it is rewarding and enjoyable.

Bridge of Allan in Old Postcards: a story in pictures 1895-1945. J. Malcolm Allan. Stirling Library Services. 66pp. ISBN 1-870542-34-7. £3.50.

Some 100 cards here selected from a collection of 450, are of good quality; some have their sender's annotations, some are familiar scenes many not, and all with the author's knowledgeable and interesting notes and quotes. The inside covers start with a proposal and unrealised development plan of spa days of 1851, and end with a current plan.

L.C.