

# TRANSACTIONS

OF

## THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

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### AGRICULTURE OF ORKNEY.

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THAT the Orkney Islands occupy a position between North Latitudes  $59^{\circ} 23' 22''$  and  $38^{\circ} 41' 24''$  and between West Longitudes  $2^{\circ} 22' 2''$  and  $3^{\circ} 25' 10''$  may be of paramount importance to the mariner, but to the average reader it is not very helpful. Nevertheless, there is perhaps a general misconception of the true position of the Orkney and Shetland Islands, doubtless due to the fact that they are almost invariably placed by cartographers in the Moray Firth—a plan which saves space, but one that gives an entirely erroneous idea both of the actual position and of the proximity of the two groups. Actually, the distance between the two capitals, Kirkwall and Lerwick, is 100 miles. The southerly islands of the Orkney Archipelago lie eight to ten miles north of the Caithness Coast and the group extends backwards or northwards for sixty miles.

The archipelago is composed of some seventy islands, but only twenty-six are inhabited. The others vary in size from two or three acres to several hundred acres, and are usually sheep-grazing rights of farms in the neighbouring larger islands. When the acreage and vegetation are sufficient to maintain a ewe stock throughout the winter, the native Orkney sheep are favoured. In the smaller islands a summer stock only is carried. Perhaps twenty to thirty sheep are ferried over to the island, or holm, in spring, and towards the

end of the season they are taken back to their usual hirsels. This 'fitting' is not accomplished without considerable difficulty—a strong tide races through the dividing channel, and usually loading and landing facilities have never been provided. It is perhaps interesting to note in passing that should the shepherd fail to note that, with the approach of winter, food is becoming scarce, the sheep may return to the parent island themselves—swimming the channel. In deciding on such a course they appear, however, to be guided by some strange instinct that may only be an attribute of island-bred sheep, but they appreciate the danger of negotiating a swift flowing tide, and take advantage of the still phase—slack water or simply the turning point of the tide. Observers have told me that sheep will judge to within half an hour of slack tide when taking the water.

The largest and main island of the Orkney group occupies a central position. The island is known geographically as Pomona, and locally as simply the Mainland. The coast-line of the Mainland is deeply indented by firths and geos, and at one point it is nearly divided in two. The narrow neck of land remaining is the boundary of the East and West Mainlands. The islands of the group lying on the northward side of the Mainland are colloquially termed the 'North Isles.' South Ronaldshay, Hoy, Burray, and a number of small islands lying between Scapa Flow and the Pentland Firth are known collectively as the 'South Isles.' The islands are therefore naturally divided into three sections. Kirkwall, the chief town and seaport of the islands, lies on the narrow neck of land dividing the Mainland. Like the Mainland of Scotland, the land towards the west side, although scarcely mountainous, except perhaps in Hoy, is hilly and more rugged than the eastern isles, which seldom rise to 200 feet above sea-level.

#### PHYSICAL CHARACTERISTICS.

There are several physical features that immediately arrest the attention of the visitor. It is doubtless well known to many people who never saw Orkney that the landscape is practically devoid of vegetation of the forest type. In favoured spots there are a few trees, but they are of no great size. Not quite so noticeable, but perhaps more important, is the entire absence of rivers of any appreciable size. There are a few streams in the West Mainland, draining the hills, but the distance from the source to the sea is never more than a few miles, and the volume of water carried is small. The Orkney farmer rarely, if ever, sees his sheaves floating down the burn, but he spends many hours during summer either pumping or carrying water for his grazing stock. It may be that the

cattle require less water—in Shetland cattle are kept on islands with no fresh water supply, and they suffer no ill effects—but this lack of water is a great inconvenience. On nearly all the larger islands, and especially in the West Mainland, there are numerous inland lochs, some extending to several hundred acres. As a source of fresh water they are a boon to the farms bordering the shores and afford excellent fishing. The farmer would be most willing to lend you his boat, but very seldom will you find him on the loch with rod and line.

The total land area of the archipelago is 240,000 acres. According to official figures 109,000 are cultivated, and of the remainder about 70,000 are heather and rough grazing. Presumably the other 60,000 are of so little agricultural value that they are not noted. From an industrial point of view, Orkney would be of very little importance were it not for agriculture. The adult members of the population of 22,000 are almost entirely concerned, directly or indirectly, with the cultivation of the land. The herring fishing industry, at one period very important, has within recent years gone very much aback, and the dwindling fleet of drifters now operates only from the island of Stronsay. Economic difficulties, chiefly currency and the fact that Germany has now provided herself with a super fishing fleet, have been responsible for the decline. The islands are, however, naturally well suited for the raising of crops and the rearing of stock. Contrary to common belief, the rainfall is not heavy—about thirty-five inches—and is well distributed throughout the year. The average temperature is around 45°, and again the sea acts as a regulator—in summer a sea breeze moderates the heat of the sun, and in winter takes the edge from the frosty air. Heavy falls of snow are infrequent, and falls of two or three inches disappear in a few hours. Perhaps the most disagreeable feature is the gales which occur frequently during winter and rage with tremendous ferocity, sometimes for days. The sea is lashed to fury, disorganising shipping and especially the inter-island services normally carried out by smaller craft.

### AGRICULTURAL HISTORY.

Although agriculture is the life-blood of the Orkneys, the industry is greatly handicapped in many ways, even if the land does respond to the toil of the husbandman. Perhaps the greatest drawback is the distance from the market, a factor that involves both freight costs and deterioration of perishable produce. To make this point clear, it should be understood that the trade route is Kirkwall-Aberdeen, or

Kirkwall-Leith, and not across the Pentland Firth to Caithness. The transport question is naturally of first importance in an insular area like Orkney, and is bound hand in hand with agriculture and its development. The lack of transport was given by many early writers as the chief reason for the slow development of agriculture in Orkney. In the New Statistical Account of Scotland, published in 1845, the ministers of the various parishes, although chiefly concerned with the lamentably low stipends and with what one writer describes as "the dreadfulness of the universal appetite for spirits," state that the condition of agriculture in Orkney was considerably behind that of Caithness and Sutherland. At that period, most of the land of Orkney was held by tenants under the run-rig system, on the iniquities of which many ministers passed their opinion. When development did come, however, it came swiftly. The run-rig system was first abolished on one estate (Graemeshall) in 1828, and on another (Binscarth) in 1831. A steamboat service between Kirkwall and Leith operated first in 1833. In 1833, the total number of cattle and horses exported is stated by Dr Clouston in his publication, 'General Observation in the County of Orkney,' to be 1200; and under the heading of sheep and swine, he gives 40 of each. The value of the animals exported is given at £5450, and £2500 is stated to be the value of the total export of 100,000 dozens of eggs. In the year 1870, 5301 cattle and 243 horses, valued at £85,000, were exported. In the same year, sheep exports numbered 7300 head, valued at £11,000, and pigs, live and bacon, valued at £40,000. The egg exports had risen to over 700,000 dozens and the value estimated at nearly £27,000. The acreage of cultivated land increased from 25,000 acres to over 70,000 acres. During this period, 1830 to 1870, Orkney farmers first became acquainted with artificial manures, and the same period saw the beginnings of the seed trade. The following extracts from the advertisement columns of the 'Orcadian,' a weekly newspaper published in Kirkwall, may be of some interest:—

22/3/1856.—J. H. Baikie, Kirkwall—Peruvian guano of "more than the average proportion of ammonia, and rich in phosphates."

5/4/1856.—New Manure—Poudrette de Bondy—"Now for the first time brought within the reach of the farmers of Scotland. . . . It is a compost of pure night soil . . . suited for all distinctions of land and crops."

13/4/1857.—"Dissolved bones, sulphate of ammonia, patent wool manure, Poudrette de Bondy, Townsend Manure."

26/4/1858.—W. C. Campbell—An advertisement appears for "Evergreen Ryegrass."

16/5/1859.—S. Langdale, manure manufacturer, advertises his opinion that Peruvian Guano is not the best and cheapest

turnip manure, and that its price is above its real value. He proceeds, "I am prepared to try my Turnip Manure, which I will undertake to supply in large quantities, with guaranteed analysis, at £8 per ton, net cash in Newcastle, against Peruvian Guano at £12 per ton in London—equal weights per acre—the winner to receive from the loser a piece of plate valued at £10 ; an account of the test to be published, judges to be appointed by any farmers' club or Society." He concluded by hoping that his challenge would be taken up.

Later advertisements recommend the use of compound fertilisers, and Basic Slag appears to have come into use in Orkney about 1884. This phosphatic fertiliser has, by the way, remained immensely popular, and is practically the only one now applied for turnips. The price refund meantime offered under the Land Fertility Scheme has, however, so greatly encouraged its use elsewhere that the supply is now strictly limited.

#### THE SHELL SAND DEPOSITS.

Orkney has a natural and almost inexhaustible supply of lime in the vast calcareous shell sand deposit around her shores. The content of calcium and the fineness of the particles vary greatly, but many samples contain upwards of 90 per cent calcium carbonate. The Mainland and nearly every island has an adequate supply of shell sand. During the winter, vast quantities of seaweed are washed ashore, and formerly thousands of tons were carted on to the land, but this practice has now ceased. In fact, just one hundred years ago, seaweed was considered by the Orcadian farmer to be a much more valuable fertiliser than dung. It is reported that the reason for the relatively high rental of one farm in the island of Sanday was partly due to its high fertility and partly to the fact that the steading was so near the shore that the dung could be pitched from the byre on to the beach, and so carried away by the tide.<sup>1</sup> The wet seaweed carried a coating of shell sand which appears to have been ample to keep up the lime content of the soil. In fact, the lime content frequently became much too high, and not until several years after the carting of seaweed had ceased, would many farms produce other than black oats—the Murtle variety being very popular.

#### THE SOIL.

The nature of the soil varies greatly from district to district, and practically all types are common, from strong blue and

<sup>1</sup> There is a reference to this in an article on Orkney in Vol. VI., 4th series (1874), of the 'Transactions.'

red clays, rich loams, peat, to almost pure sand. Mixtures of moss and clay, of sand, clay, and gravel, and, in fact, all possible permutations, are frequently found. The subsoil, except in favoured valleys, is seldom a foot below the surface, and, like the soil, is greatly varied. A red clay subsoil, rather impervious, is perhaps the most common type. Much of the soil in the island of Sanday, as the name implies, is composed chiefly of sand ; yet there are some fine and highly productive farms on the island.

#### FARM STEADINGS.

From the information contained in various writings, from dates on buildings, and from the memories of the older inhabitants, it is evident that a move towards the construction of more modern and more adequate farm steadings reached its maximum strength in the 'seventies. By this period proper roads had been constructed throughout the islands, making inland transport less hazardous. The building movement was naturally encouraged by the landlords, who either had the work carried out themselves and charged the tenant additional rent, according to the capital outlay involved, or they gave the tenant assistance by providing wood, slates, and the other necessary materials free, while the tenant carried out the actual work. When the landlord undertook the reconstruction scheme the work was usually more thoroughly done. The existing buildings were demolished and replaced by a complete steading, adequate for the requirements of the farm and fashioned according to current ideas. On many of the smaller farms, however, the reconstruction of the steading was more commonly left to the tenant or owner, who could seldom afford to demolish any building that was still wind and water tight, even if dark and dingy, low-roofed and inconvenient. As further building became necessary on these holdings, either due to the decay of the existing structures or to the increased stock-carrying capacity of the farm, it was done not with an eye to the future, but according to the needs of the moment and the money available. Usually a new wing was constructed to suit the old building, and with each replacement the steading became more and more inconvenient.

The practice is not indigenous to Orkney, but on many farms the barn has been built at some little distance from the main steading in order to utilise the power of an adjacent stream. Water, however, for this purpose is none too plentiful in Orkney, and the horse was the most usual form of power employed for threshing purposes prior to the advent of the internal combustion engine.

Windmills as a source of power for the thresher were not uncommon; in fact, in some of the islands they are still in operation. The horse mill is obsolete, but the mill-courses remain on many farms. It is perhaps of interest to note that, on some farms, the mill-course was protected from the weather by a wall built around the periphery of the course and roofed over. Although the driver and his team were thus protected from the gales, the building was invariably ill-provided with light and ventilation, so much so that one would imagine a young spirited horse might have been very troublesome during his first experience of such strange and unusual surroundings.

#### SYSTEM OF LAND TENURE.

By far the largest portion of the land in the county is held by occupying owners, of whom a considerable number do not hold from the Crown, but direct under the old udal rights, "from the highest of the hill to the lowest of the ebb," including rights of sea-ware, sand, &c.

After the end of the European War in 1918, when land values were at a high level, many of the local estates were broken up and the farms sold to the occupiers at about twenty-five years' purchase. One result of this, in the ensuing difficult years, has been to handicap the individual farmer by tying up his capital.

Another serious result, felt very much in a county such as Orkney, has been the difficulty experienced by the farm servant class, or the sons of crofters, in making a start in farming on their own account. Previously, such a one had only to accumulate enough cash to buy the few cattle, the horse or pair of horses, and the implements necessary to stock an Orkney small farm of twenty acres or so, and then wait his chance of a suitable holding. Now, however, there must be added to this sum at least half the capital value of the holding, and that only provided the prospective purchaser could negotiate a bond on the property. An added difficulty has been the smaller number of holdings coming on the market yearly than was the case when they were only to let. This is a serious matter when it is realised how largely the farming community in Orkney is recruited from this class.

Where there are holdings still let they are generally on leases of fourteen to twenty-one years, and the leases are fairly simple and straightforward. The custom of having crops and various implements 'steel-bow' has now been largely abandoned. Since the runrig system was abolished and commonties divided, in the years from 1830 to 1845,

there has been a steady and gradual improvement in the lay-out of farms and fields, the system of tethering the stock has passed in favour of fenced enclosures on all except the smallest holdings, and children are no longer employed to herd the cattle on hill grazings during the summer months. This latter was a very common practice thirty years ago, and many a hard-pressed parent of a large family found their boots and winter clothing from the wages of those small 'herdsmen,' not to mention the great benefit to their health from the long lazy hours in the open air.

Of the something over 3200 agricultural holdings in the county at the present time, 55 per cent have a valued rent of under £10 per annum, 23 $\frac{3}{4}$  per cent a rent of from £10 to £20, 15 $\frac{1}{2}$  per cent £20 to £50, 5 $\frac{1}{4}$  per cent £50 to £99, and 1 $\frac{3}{4}$  per cent £100 and over. The average size of holding may be put at about thirty acres, in some cases with an area of hill pasture or outrun in addition. In other cases, the hill is used solely for cutting peats for the year's supply of fuel.

#### RECLAMATION.

Where the hill land is in suitable proximity to the farm, there has been for some time a breaking up and reclaiming of such ground, resulting in a total increase of 19,483 acres in the arable acreage of the county from 1872 to 1936. This reclamation is a striking feature of Orkney agriculture. We think we are right in stating that in no other county in Scotland is this process going on to the same extent.

The most suitable land to reclaim is dry heathery 'brecks,' as they are called, with a shallow layer of peaty soil on fairly porous reddish clay subsoil. When an impervious 'pan' exists between soil and subsoil, this must be broken up to get anything like satisfactory results. The most usual method is to plough down the heather with a broad shallow furrow turned over flat. This is left for at least a year, so that the heather is well rotted, when the land may be ploughed again, across the furrows if possible, with an increased depth this time, and the soil brought to a suitable tilth before sowing about five bushels sandy oats per acre. To secure this tilth, a disc harrow is very useful, or a well-sharpened iron zigzag harrow. A top dressing of artificial manure is advisable; ground limestone or shell sand, 2 tons per acre, and 10 cwt. basic slag is applied just before or just after the seed is put in. We also favour the use of 2 to 3 cwt. per acre of a readily available mixture of nitrogen and phosphate soon after the braird appears.

A seeding of from 40 to 45 lb. grass seeds seems to be required if this new land is to be left as pasture for any length



of time. Mr Chas. Hourston, Beauquoy, Dounby, has had excellent results with the following :—

8 lb.	Italian ryegrass.
4 „	Ayrshire perennial.
4 „	Evergreen perennial.
8 „	Danish cocksfoot.
2 „	Scots Timothy.
2 „	Crested dogstail.
1 „	Alsike clover.
2 „	Swedish late-flowering red.
15 „	Wild white <i>cleanings</i> .

This last was a very useful and inexpensive item in the mixture, and Mr Hourston has had excellent results from a seeding of 40 lb. of these *cleanings* alone. He has used both these seedings without a nurse crop and grazed them from the first year with very good results, care being taken to keep stock off the ground the first season when it was wet. Mr Hourston began reclaiming land about ten years ago and has added 16 acres good pasture to his farm, whereby he is enabled to keep sixty cows, no sheep having been kept previously.

He has on occasion made a compost of earth and poultry droppings, which, applied at the rate of eight cart-loads per acre, gave a most satisfactory return in the crop of oats. Though ploughing was always the most effective, Mr Hourston found that surface cultivation by tractor and tandem disc harrow could be very effective, the grass seed in this case being sown without a nurse crop. He favours the application of 12 cwt. high-grade slag and 3 tons shell-sand per acre. If there is much heather this is burnt off when practicable or harrowed by iron harrows immediately after a spell of frost.

The extensive farm of Lyking, in Sandwick parish, has for long been the scene of persistent land reclamation. The farm comprises about 400 acres, of which no less than 300 have been broken in from heather, to be, as now, part arable and part good sheep pasture. The present proprietor, County Councillor J. M. H. Robertson, has followed in the footsteps of his father and grandfather in improving the property. He has been greatly helped by their experience, as well as by the modern developments in machinery, in manures, and in grass-seed mixtures, and has proved by no means the least energetic of his race. Well over 100 acres have been reclaimed within the last forty-five years. At first Mr Robertson called the forces of nature to his aid by allowing one or two seasons to pass after the first ploughing, when surface stones were carted off and a second ploughing undertaken, the plough this time being followed by a subsoiler. The soil

was then worked down with iron harrows and seeded with sandy oats. A favourite manure at this time was a dressing of raw 'sillocks,' about four cart-loads per acre, obtained from Stromness harbour, where huge shoals of these small fish used to gather, and, in fact, still do. The seagulls had to be kept off with a gun, and the resulting dose of readily available phosphate and nitrogen produced quite a useful corn crop. A heavy application of shell-sand was found to be an absolutely necessary item in the proceedings. Then a crop of turnips, manured with dung and phosphates, was taken, and though generally a light crop was got, the necessary working completed the reduction of the newly tamed 'brecks.' A nurse crop of oats followed with from one and a half to two bushels home-grown rye-grass and a few pounds of clover.

Mr Robertson says some of this land laid down forty years ago is still useful pasture, but is being renovated with a tractor and Aitkenhead ripper harrow followed by ten cwt. slag per acre. Wild white clover will appear in land treated thus, though never sown.

Nowadays life is too short for such a ritual and the tractor is called in, with the result that instead of seven or eight acres, fifteen or sixteen can be tackled in a year. After the second ploughing the land is reduced by the tandem disc harrow and a complete modern grass-seed mixture sown without a nurse crop, the shell-sand and slag being supported by two to three cwt. per acre of a supers and potash salt mixture, and later a top dressing of nitro-chalk or sulphate of ammonia. All stock are kept off until a winter has passed.

From Orkney's only inland parish, Harray, the "parish of the Peerie Lairds," we have news of another land reclamation.

Five years ago, Mr James Flett of Kingshouse began breaking up some very poor, thin, hill ground with a hard clay subsoil. The surface had been cut away for poor quality peats, no grass grew on it, and not even heather in some parts, the surface being raw and broken.

To date about fifty acres have been treated and the success obtained, looking to the poor quality of the original surface, has been startling.

The first plot was horse ploughed in the winter months of 1934 and 1935, and reduced with horse-drawn disc harrow. Twenty-six lb. per acre of the following grass-seed mixture was sown on 1st August 1935: 12 lb. perennial rye, 2 lb. crested dogstail, 5 lb. cocksfoot, 2 lb. rough-stalked meadow grass, 1 lb. late flowering red clover, 1 lb. broad-leaved red, 1 lb. alsike, 1 lb. Kentish, 1 lb. New Zealand wild white.

The following manures per acre were given: 10 cwt. 40 per cent slag, 1½ cwt. steamed bone flour, ½ cwt. sulphate of ammonia.

Cost for seeds and manure, £4, 1s. 3d. per acre.

In 1935-36, a second five acres was horse ploughed, but here the tractor was called in with tandem disc harrow to make a tilth. Practically the same grass-seed mixture was sown in July, with 10 cwt. 36 per cent slag, 1½ cwt. 35 per cent supers, ¼ cwt. sulphate of ammonia, and in addition a very heavy dressing of 10 tons per acre of shell-sand; total cost per acre £6 (shell-sand 5s. per ton).

Twenty acres were tackled in 1936-37, fourteen acres tractor ploughed, and six acres disc harrowed only. This time a heavier seeding of 34 lb. per acre was used, and no artificials except 10 cwt. slag per acre. Twelve lb. perennial rye, 3 lb. Italian, 4 lb. Danish cocksfoot, 4 lb. crested dogstail, 6 lb. rough-stalked meadow grass, 1 lb. alsike, 1 lb. each of broad-leaved red and late-flowering red clover, 1 lb. each of Kentish and New Zealand wild white; outlay £2, 12s. per acre.

In 1937-38, twenty acres were ploughed, and, as it was seen that the previous year's experiment was not looking well, a still heavier seeding of 42 lb. per acre was used, and the slag was supplemented by 3 cwt. per acre potato manure. Twenty lb. rye-grass, 8 lb. cocksfoot, 3 lb. rough-stalked meadow grass, 3 lb. crested dogstail, 4 lb. rib grass, ½ lb. late red clover, ½ lb. white, 1 lb. each of Kentish and New Zealand wild white; a net outlay less slag subsidy of £3, 6s. per acre. This was immediately successful, better even than Plots 1 and 2, and due, we are convinced, to the presence of soluble plant food in the potato manure. In the winter of 1937 Plot 2, which got the heavy dressing of sand, did not look too well and was badly affected with 'fog.' A dressing of 10 cwt. per acre of slag in January 1938, however, cured that, and resulted in a luxuriant growth of wild white clover throughout the grazing season of 1938.

Mr Flett still has ten or twelve acres which he intends to plough up, but is going to allow 'Jack Frost' to help in the good work by allowing a year to elapse before seeding.

In the 'Transactions' of 1874, in the article on the Orkney Islands, mention is made of improvements carried out on the estate of Binscarth in Firth parish. Some of the pasture then laid down was badly in need of renovation by 1930, and in the winter of 1931 ten acres at Binscarth were broken up by horse plough and sown with six bushels per acre of sandy oats in the spring of 1932. Eight cwt. per acre of a complete grain manure was also applied and a fair crop was successfully harvested. The next year this land was again horse ploughed and sown out with 'Bell' oats, and 38 lb. per acre grass seeds as follows: perennial rye, 15 lb.; Evergreen, 5 lb.; Danish cocksfoot, 6 lb.; New Zealand leafy, 4 lb.; Scots timothy, 2 lb.; rough-stalked meadow grass, 1 lb.; sheep's fescue, 1 lb.; rib grass, 1 lb.; alsike, 1 lb.;

late-flowering red clover, 2 lb.; New Zealand wild white,  $\frac{1}{2}$  lb.; Kentish,  $\frac{1}{2}$  lb.

Six cwt. per acre high-grade slag was also applied, and quite a useful grain crop resulted. The take of grass was most satisfactory, and a further 6 cwt. of slag per acre in 1936 has established a very useful pasture. In 1932-33, a further ten acres at the farm of Kingsdale in the same parish were tackled, this time ploughing by tractor. This land had entirely reverted to heather and rushes, and the horse ploughs had great difficulty in setting up feerings owing to the toughness of the surface. The Fordson tractor and two-furrow Oliver plough made a satisfactory job, however, and horse-drawn disc harrow worked it up sufficiently to allow of its being seeded with oats alone the same season. The soil being a rather poor clay, only a very scanty crop was reaped, returning practically only the seed sown. The land was disked without further ploughing in 1933-34 and sown out with the following temporary grass mixture: 5 lb. Italian rye, 15 lb. perennial rye, 10 lb. cocksfoot, 4 lb. timothy, 3 lb. English red clover, 2 lb. late-flowering red, 1 lb. alsike. A dressing of 6 cwt. per acre slag was given to the poorer parts of the field; cost of 23s. per acre. The take of grass was poor, and it was evident that the fault was in not providing readily available plant food. The field was again ploughed in winter 1937 and the heathery turf found to be well rotted. It is at present being dunged on the surface preparatory to being ploughed for turnips, after which it will be sown out with a more permanent grass mixture and a substantial dressing of slag in 1940.

Apart from these definite examples, there has been extended widely over the county a gradual breaking in of such small areas yearly as there may be time for among the multifarious duties of an Orkney small farm. This has led to an increased area of pasture for sheep, and many farms now carry a flying stock of cheviot ewes that never had sheep before.

The introduction of modern grass-seed mixtures, with wild white clover, has led to alterations in the arable rotation, and this is much more elastic than it was prior to 1914. Then oats, oats, turnips, oats and seeds, hay followed by one year's pasture, or oats, turnips, oats, hay and two years' pasture was the general routine which was adhered to inflexibly. The first year's grass was the best and it deteriorated rapidly thereafter. Now the second year is generally the worst and the pasture improves with every year it can be left down, till the farmer with memories of thirty years ago can hardly bear to plough it up! A smaller ration of turnips is now being fed to all classes of cattle in the county, which, taken with the larger grain crops grown by the clover-enriched soil, explains the increased stock carried in the county. Where

possible it is often found that the acreage of the turnip break has been reduced, with consequently more land to grass; five, six, or seven years' pasture being quite common. The former inflexible sequence of fields can now be departed from, and should a bad harvest or other cause give a poor take of grass, that field may be ploughed up out of its turn, with the knowledge that the other whose turn it was will only 'improve by keeping.'

With the object of avoiding the over-heavy, tangled lea crops got after years of wild white clover, some farmers are sowing turnips after lea, followed by two oats crops. Where the land is in good heart the customary application of dung may be withheld from the turnip crop, and applied instead to the following grain crop, otherwise the turnips tend to grow very strong shaws without a corresponding increase in bulb.

The application of potassic manures is found to be little needed in Orkney, the chief requirement being phosphates, of which superphosphate of lime and finely ground mineral phosphate are the usual forms in a compound manure mixture, or basic slag sown by itself.

#### LIVE STOCK.

The usual system of farming practised in Orkney is that common to the north-east of Scotland generally, and is directed towards the raising of commercial stock—cattle, sheep, horses, and pigs. The poultry industry, starting as a side-line, has now developed to such an extent that the annual value of the egg exports nearly equals the combined value of that for cattle, horses, sheep, and pig exports. It must be noted, however, that the bill for imported poultry foods considerably exceeds the expenditure on imported foods for the other classes of stock. The cattle, now mainly Aberdeen-Angus crosses, are reared on the produce of the farm and must yet be regarded as the mainstay of farming in the islands.

#### CATTLE.

In the year 1870 the figure for the cattle population was given at 22,235. Since then the number has gradually increased, the most rapid rise being an increase of nearly 5000 during the ten-year period from 1920 to 1930. The peak figure of 39,467 was reached in the year 1935. Owing to the relatively higher prices ruling for lambs, sheep-farming has tended to become more popular during the last few years, and the cattle population has fallen by about a thousand below the

maximum figure. For many years the Orcadian farmer prided himself in improving his cattle, and so successful have his efforts been that the most experienced and far-travelled visitor freely admits that the Orkney cattle, as a class, are superior to those of any county in Scotland or England.

In the grading-up process, West Highland, Shorthorn, and Aberdeen - Angus breeds have predominated, and of late years the latter have held sway. At one time most of the cattle were exported as stores, and because of their reputation they commanded high prices. Store cattle are still exported, but an increasing number are consigned to the fat market.

Several factors have contributed to the high standard of the cattle stocks. The Department of Agriculture Premium Schemes have done much, and the Orcadian farmer has endeavoured to take the utmost advantage of these schemes. He has also realised to a greater degree than most that the quality of his cross cattle depends on the quality of the female parent as well as that of the male. He has, therefore, selected his cows with great care, and the best heifers are always retained for breeding purposes. As a result, the female breeding stock at present to be found on the Orkney farms can be described as of exceptional quality. There is practically no outside source of calves, and the number of cows normally kept on a farm may be as high as 40 per cent of the bovine population. If milking and beefing qualities do not go hand in hand, the Orcadian farmer can afford to concentrate on the improvement of the latter character, as he has little opportunity of disposing of surplus milk and milk products.

#### PURE STOCK.

There is another factor that has contributed much to the excellent quality of the Orkney stock. Those of considerable experience believe that Orkney-bred bulls are generally better suited to the islands than imported bulls—that the home-bred animal, come of acclimatised stock, is the most suitable type of breeding animal. To cater for this demand the breeding of pure stock has been carried on in Orkney for nearly seventy years, and for the last forty years an annual sale of pure-bred stock has taken place in Kirkwall. The number of animals exposed at this sale varies between thirty and forty.

The late Mr James Johnston, Coubister, Orphir, a Shorthorn fancier, was the pioneer breeder of pure stock in the county. Two cows, "Flora" and "Rose," belonging to Mr Johnston, are entered in Volume 23 of the Shorthorn Herd-book. The stock bulls at Coubister were brought from many of the best-known homes in Aberdeenshire—Sittyton, Collynie,

Jackston, Dunglass, Inverquhomery, Muiryfold, and from Cluny Castle. The herd founded by the late Mr Johnston is still in existence, but since he started many fanciers of both the Aberdeen-Angus and Shorthorn breeds have entered the lists, and many have retired. Mr Alexander Calder has had the longest experience in the breeding of Aberdeen-Angus cattle. On taking over the farm of Sebay in 1907, Mr Calder acquired the herd belonging to the late Mr John Cumming. Mr Calder has imported stock bulls from such well-known herds as Ballindalloch, Harviestoun, Fasque, and Mounthooly, and the Sebay stock has, on a great many occasions, carried off the championship at the Kirkwall Show. Mr Calder has also the distinction of having obtained the highest price of £103 ever recorded at the local sale.

Varying fortunes have attended the Orkney bull breeders since the local sale of pure stock started in 1900. The demand is strictly local, and prices tend to vary according to the number of premium bulls required. Average prices have been as low as £16 and as high as £54. Of the thirty-one animals exposed for sale at the 1939 show and sale of pure stock, there was only one Shorthorn forward, the others being of the Aberdeen-Angus breed. The average price was £33, 14s. 7d., and the highest price of 64 guineas was paid for a November bull, bred and exposed by Mr Calder. The Aberdeenshire judge, Mr Pat Strachan, himself a well-known breeder of Aberdeen-Angus cattle, commented favourably on the fine show of young bulls, all typical specimens of the breed.

The Orkney Agricultural Society sponsors a Fat Stock Show, which is also held in Kirkwall. The date of this show and sale is usually fixed for the first Monday of December, as many of the cattle are afterwards sent to the chief Christmas sales of fat stock in Aberdeen, Edinburgh, and Glasgow. The highest price obtained at the 1938 show and sale was £38. This price was paid for a blue-grey steer exhibited by Mr James Ritch, Hatston. This steer later made the highest price at the chief Christmas sale in Aberdeen. In 1937 the highest price, £42, was obtained for a blue-grey steer exhibited by Mr James Gaddie, Bu'. Mr William Ritch, Kierfield, has been one of the most successful exhibitors at the Kirkwall Fat Stock Show, and has gained many prizes for his stock.

#### HORSES.

If the cattle population has increased some four hundred per cent during the last hundred years, a considerably greater decrease appears to have taken place in the number of horses. The late Dr George Barry, Parish Minister of Shapinsay,

published a history of Orkney in 1805, and in a chapter concerning the live stock of the county he estimated the horse population at 25,000 head. The latest census shows a population of only 5837 horses.<sup>1</sup> Commenting on this amazing fact, Mr P. N. Sutherland Graeme, in an article contributed to the Journal of the Orkney Agricultural Discussion Society, writes :—

“ It is plain that in those far off days, as to-day, the normal use to which horses were put was either for draught or saddle purposes, so let us begin by enquiring as to the requirements of the farmer in those respects some 150 years ago. First of all, it must be remembered that in the early part of the eighteenth century practically all the ploughing and all the harrowing was done by work oxen, and even at the end of that century the work ox was still doing some of the ploughing, most of the harrowing, and all the cart work, which was very little, because carts had only been recently introduced. It is, however, not suggested that the Orkney farmer at any time rode his work ox to Kirkwall or elsewhere.”

The introduction of tractors does not account for the tremendous drop in the horse population, but from the information furnished by Dr Barry and by Mr Sutherland Graeme, it is evident that at the beginning of the nineteenth century there must have been a large number of unemployed horses in Orkney.

Dr Barry states that the original breed of horses found in Orkney was of a Scandinavian type similar to the Shetland pony. At a later period, horses of the Garron type were introduced from Caithness and, in fact, there was at one time a considerable trade in these horses, the Orkney farmer apparently preferring to buy rather than breed his own horses.

It is impossible to say at what period Clydesdale blood was first introduced into the county, but all trace of the Garron ancestors has now been practically bred out. The late Mr R. O. Watson of Kirkwall was one of the first to introduce Clydesdale stallions, and had on occasions as many as four entire horses travelling the Mainland districts. Perhaps one of the best stallions owned by Mr Watson was “ Ability ” (10,484). This horse was not a prolific breeder, but his progeny were of excellent quality.

Mr John Tait of Papdale, near Kirkwall, another improver, introduced many excellent horses. He favoured the heaviest types and, in fact, introduced a Shire stallion, named “ Saxon Marmion,” but this horse does not appear to have been favoured.

The late Mr Robert Scarth of Binscarth was one of the most enthusiastic of the early improvers of the Orkney horse.

<sup>1</sup> It would appear that the horse population in Orkney fell most rapidly during the period from 1830 to 1860. In the year 1870 the official figure was 5551.



He brought several females as well as males into the county and kept a stud of excellent breeding mares at Binscarth. Mr Scarth was also instrumental in the formation of the First Orkney Horse-Breeding Society, in or about 1890, of which he was Secretary. Of the many excellent horses introduced by this Society perhaps the most famous was "Balmedie Queen's Guard" (10,966). This horse was a son of the famous "Baron's Pride" (7122) and half-brother to "Baron of Buchlyvie" (11,263), that aristocrat of the breed which caused such a sensation some thirty years ago by fetching the record price of £9500. "Balmedie Queen's Guard" came to Orkney in the year 1907, and proved one of the best breeding horses that has ever been in Orkney.

#### HORSE-BREEDING GRANTS.

The work initiated by the Horse-Breeding Society was greatly accelerated when in 1913 the Department of Agriculture offered grants to encourage improvement in horse breeding. The amount of the grant was later curtailed, but until the scheme was withdrawn in 1932 it contributed very largely to the improvement which took place during that period. Horses bred of the best blood in Scotland travelled in Orkney. Local horse-breeding societies have also been greatly encouraged in their efforts by the premium schemes financed by the Highland and Agricultural Society. Under this scheme a local society may obtain an annual grant of £15 towards the hire of an approved stallion. These grants are obtainable for three years. The Highland Society's premium scheme has undoubtedly contributed much to the quality of the Orkney farm horse, and especially is this true in the smaller islands, where it is relatively more expensive, owing to the limited number of mares available, to hire a quality stallion. Quite recently the Clydesdale Horse Society has offered breeding grants, and this has led to a marked increase in the number of registered mares.

At the present time there are two Horse-Breeding Societies operating on the Mainland, and there is one Society on each of the larger islands. Usually stallions are hired for the season, although some of the Societies prefer to purchase horses. It would be wearying to enumerate the stallions which have been either owned or hired by these Societies, but a few of the names are outstanding: "Craigie Majestic," "Craigie Limelight," "Potty Emblem," "Coldoch Select," "Rockhill Footprint," "Milton Monarch," "Kismet," "Craigie Excellence," "Craigie Exquisite," "Full Tide," "Royal Factor," "Windlaw Marcellus," and "Windlaw Topsman." The enterprising members of these Orkney Horse-Breeding Societies did not confine themselves to procuring

the best stallions, but the best female stock was retained for breeding purposes. These are the chief reasons why Orkney can now breed horses able to compete with any.

Within the last few years there has been a great increase in the number of tractors in the islands, but this has not been coincident with a marked fall in the horse population. Fortunately, Orkney farmers have so far had no experience of that dreaded scourge—grass sickness. When the cause of this disease has been discovered, an explanation of the rather singular fact may be forthcoming, but as a continual trade in horses between the islands and the Mainland of Scotland is carried on, it is surprising that infection has not been imported.

### SHEEP.

Orkney farmers have never gone in extensively for sheep. In fact, there are not half a dozen regular hired shepherds in the county. The total number of sheep has risen considerably, however, within recent years, and now stands at 74,813. The principal breed is the Cheviot of North County type, chiefly imported as cast ewes or gimmers from Caithness. There are very few regular home-bred sheep stocks, the most considerable probably being that at Binscath, Firth, of 550 Cheviot ewes, the foundation stock of which were introduced by the present owner's grandfather about 1878 from Clebrig in Sutherland, and have been kept true to type ever since.

Most other stocks are kept up by the addition of ewe lambs, gimmers, or warranted cast ewes yearly, and are almost all pastured on arable ground with access here and there to small areas of permanent pasture or hill ground. There are many thousands of acres of heather unutilised in the county which would make good grazing for blackface ewes, but they are so much subdivided among the numerous small proprietors that the prospect of co-operative fencing and stocking is exceedingly remote. This is to be regretted, as the winters in Orkney are not severe, and blackface sheep would do well with no hand feeding save perhaps in spring, which is the hardest time of the year for out-wintered stock in Orkney.

The largest proportion of the lamb crop is half-bred, though of late years some rams of the Down breeds have been used with success, notably in the North Isles.

These lambs are sold as stores, mostly in the Edinburgh market, and are esteemed as very healthy and good doers. A large number of the crofts and small farms keep a few ewes of what is commonly called the 'Orkney-Leicester' breed, and exchange rams of their own breeding. These ewes lamb from late December onwards and can be housed at night

in severe weather. They supply the local market with fat lambs in the early part of the season.

The original breed of small, native, short-tailed sheep common to Orkney and Shetland have now declined to a few flocks on outlying holms and small islands. They are chiefly valued for their wool, which comes next in fineness after the Shetland wool, and is generally of the same colours. Their mutton is used for home consumption, being exceedingly sweet and well flavoured, but not attractive when shown in the shop window, owing to the dark colour and leanness of the meat.

The chief flock of this breed is now found in North Ronaldshay, and is chiefly remarkable in that it is confined entirely to the seashore by a high wall completely surrounding the island. Only one or two small areas of closely eaten pasture are found outside this wall, and the sheep subsist on the seaweeds exposed at low tide or thrown up on the beach by gales. Venturesome individuals are often caught by the tide or by heavy seas and drowned, though not to the same extent as on the isle of Eynhallow in the sound between Ervie Parish and the island of Rousay. There, there are outlying skerries accessible at low water, and the rise and fall of the tide being often varied by the weather conditions, considerable numbers of sheep are lost there every year.

However rich the grazing on land, the sheep regularly seek the beach at ebb-tide, and this is not confined to the native breed, for Cheviots put out on such islands for the summer are observed eating seaweed within a few days of being put there.

#### PIGS.

With regard to the pig population of Orkney, it is a case of "many-pickles mak' a mukle," for with the exception of the farm of Binscarth, already referred to, we do not know of any farm keeping more than a score or so. Yet the number of fat pigs contracted for under the 1939 Marketing Scheme is about 2500, and several hundreds more will certainly be supplied to local small curers and the pork market. All pigs reared in the county are home-bred, and are of the Large White breed. There is an almost entire absence of pig diseases, and the only threat to this happy state of affairs is the necessary importation of breeding stock, which, however carefully it may be carried on, is liable to introduce trouble in some form. Orkney pigs have travelled far from the days of the 1870's when the pig population was about 5800, and one was liable to encounter droves of angular, black, hairy apparitions among the peat bogs, which were more like survivals from a bygone age than members of the porcine race. In numbers,

this is the only breed of live stock that has gone down in the last seventy years, but the value has risen from £3, 10s. per head of pigs exported in 1871 to, say, £4, 15s. in 1938. In 1872 the number of pigs in the county was calculated to be 5866. In 1938 it was 2767. Prior to the operations of the Pigs Marketing Schemes, pig breeding or feeding was a most speculative business. In the period since the end of the Great War, young pigs varied in price from 4s. 6d. to 35s., and fat pigs of equal weight from £3 to £5.

The cost of marketing a fat pig in Aberdeen is about eleven shillings, and the freight and carriage on a ton of imported pig meal about fifteen shillings, which together formed an impassable barrier between the Orkney pig-feeder and a profit.

Now, however, there is more prospect of a stable market, and those who so desire may venture to provide suitable pig premises with some expectation of a small profit. At Binscarth, sheds have been built on the Scandinavian plan to accommodate about 140 breeding and feeding pigs, and 240 fat pigs are produced annually.

#### LOCAL MARKETS.

Monday is market day in Kirkwall. The Kirkwall Auction Mart has recently been reconstructed and enlarged to cope with the increasing number of cattle which passes through this sale. It is a market for store cattle, sheep, pigs, calves, and poultry, but normally very few fat cattle are exposed for sale. A high percentage, however, of the Orkney store cattle, especially in the islands, are purchased privately by dealers for direct shipment to Aberdeen, Edinburgh, and other distributing centres. Wednesday is market day in Stromness, but only a few cattle are normally exposed at this sale. The Stromness Mart is now owned and controlled by a company of farmers. A monthly market is held in Dounby, where trading in live stock is done by private bargain. This centre is now, however, mainly a meeting-place for farmers, and the number of stock changing hands gradually becomes less.

#### AGRICULTURAL SHOWS.

The agricultural shows held in the latter half of July and beginning of August in each year serve the Orcadian farmers as shop windows for the display of their stock-in-trade, and are attended by hundreds of farmers and others interested in agriculture, both within and without the county. Shows are held in the islands of Rousay, Westray, Eday, Shapinsay, and Stronsay of the North Isles, in South Ronaldshay and Hoy in the South Isles, and in the East and West Mainland

districts in July, leading up to a grand climax in the County Show at Kirkwall early in August, held under the auspices of the Orkney Agricultural Society. Leading agriculturists from Scotland are invited as judges, and invariably express their satisfaction with the quality of the animals paraded before them. Competition is very keen for the major honours, especially as betwixt representatives of East and West, and a healthy rivalry is carried on in a truly sporting way.

As will be readily understood, the cattle and horse classes provide the main interest, and many fine animals of all ages, and both pedigreed and 'commercial,' are to be seen. The sheep sections are being developed, and more interest is being shown in them.

SOME STATISTICS FOR 1937.

The following statistics may be of interest. They are taken mainly from those issued by the Department of Agriculture for Scotland. With regard to the figures for feeding-stuffs and manures imported, these, though not official, may be taken as substantially correct:—

	Acres in Cultivation.
Barley and Bero . . . . .	1,998
Oats . . . . .	29,099
Potatoes . . . . .	1,664
Turnips (including Swedes) . . . . .	11,382
Rotation Grasses and Clovers (for Hay) . . . . .	11,539
"    "    "    (not for Hay) . . . . .	34,382
Permanent Grass (for Hay) . . . . .	916
"    "    (not for Hay) . . . . .	17,701

	LIVE STOCK.	Total Stocks.	Exported during Year.
Horses . . . . .		5,756	382
Cattle . . . . .		38,570	10,461
Sheep . . . . .		77,384	30,060
Pigs . . . . .		2,526	992

POULTRY.

Number of Fowls on holdings exceeding 1 acre, 517,137.  
 Density of Fowls per 100 acres of land under crop and grass, 475.  
 Eggs exported, 3,264,883 dozens, valued at £214,259.

Agricultural Feeding-stuffs imported . . . . .	14,000 tons.
"    Manures imported . . . . .	2,900 "

*Some Examples of Freight Charges from Kirkwall or Stromness to Aberdeen.*

Horses . . . . .	about £2, 10s. per head.
Yearlings and Foals . . . . .	£1 to £1, 10s. per head.
Cattle (Stores) . . . . .	11s. 3d. to 13s. 6d. per head.
„ (Fat) . . . . .	16s. 4d. per head.
Sheep and Lambs . . . . .	1s. 9d. to 2s. 3d. per head.
Pigs . . . . .	6s. 8d. per head.
Eggs . . . . .	30s. per ton.
Cost of marketing Fat Cattle in Aberdeen (including freight) . . . . .	£1, 8s. per head.
Cost of marketing Store Cattle in Aberdeen (including freight) . . . . .	20s. to 23s. per head.

(From the North Isles, 8s. per head may be added for Fat Cattle.)

### PRINCIPAL TOWNS.

Kirkwall, the capital of the Orkneys, and chief outlet, through its safe and commodious harbour, for the agricultural produce of the county, was created a Royal Burgh in 1486. But its history goes back far beyond that date. Before even the Viking days the Culdees built a church in what was then a primitive fishing village, but it was not till about the beginning of the eleventh century, when Earl Rognvald I. built the Kirk of St Olaf, that the 'creek of the kirk' received its name Kirkiu-vagr or Kirkwall about 1035. In the year 1137 Earl Rognvald II. built and dedicated to St Magnus the magnificent cathedral which dominates the town to this day, and from then onwards the town showed a dual development, one part clustering round the Castle of the Earls of Orkney and the other adhering to the Bishop's Palace, with the great cathedral between them. The episcopal part was called the Laverock, and the ancient handball game, called the New Year's Day Ba', still commences at the lane which marks the boundary between the two.

In 1468 Orkney was pledged to Scotland by Denmark for 50,000 florins and Shetland for 8000, as the dowry of Margaret of Denmark when she married James III. of Scotland, and in 1471 an Act was passed annexing the islands to the Scottish crown.

With the passage of time and the increase of agriculture in the county, Kirkwall grew rapidly, and when the former sailing packets were replaced by steamers in 1833 the harbour was improved and the pier has been lengthened and widened quite recently. Shops have been modernised and enlarged, plate-glass has replaced the small-paned windows of earlier days, and the city has both gas and electricity undertakings.

The octocentenary of the cathedral was celebrated by the Magistrates and Town Council with the co-operation of Kirk and County in 1937 in a manner befitting the importance of the occasion, and notable visitors were welcomed and entertained from the parent countries of Scandinavia as well as from Great Britain.

Kirkwall, for its industrial development, had the advantages of a central position, but it cannot compete for picturesqueness and charm of situation with its sister burgh in the West. Stromness, lying between hill and shore beside a splendid natural harbour, had its zenith in the days when the Hudson Bay Company's ships used to call for water and provisions and recruits before setting out for the Nor'-West. Then, too, it was the scene of a prosperous herring fishing, and the finest quality herrings always came to Stromness from the grounds off Hoy.

Nowadays it is a popular resort of summer visitors, who find it an ideal centre from which to visit the finest rock scenery and archaeological remains in the county.

Its single narrow street winds along the shore from north to south, and the eye is continually arrested by glimpses of quaint old-fashioned gables and windows round unexpected corners. Stromness is the fortunate possessor of an excellent and abundant water supply, and many vessels still call at the pier to fill their tanks.