

LAND USE AND FARM PRACTICE IN THE PARISH OF DALE

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INTRODUCTION

DALE parish occupies a remote peninsula in the extreme south-west of Pembrokeshire, no part of it being more than $\frac{3}{4}$ mile from the sea; it is almost wholly exposed and windswept. The parish boundary runs from the head of the Gann estuary in the east to the southern end of Marloes Sands in the west, and from this line the headland stretches southwards $2\frac{3}{4}$ miles to St. Ann's Head. An acreage of 1,825 and population of 250 (excluding Naval personnel) give Dale a population density of just over 7 per acre, but most of the people are concentrated in the village nucleus.

Land use is never controlled by a single factor. The pattern of land use at the present day is the cumulative result of the long continued action and interaction of natural, historical, political and economic influences. The last three influences have varied at different times and their effect is continually changing the pattern of land use. On the other hand the natural factors, geology, relief, drainage, climate and soil exert an unchanging influence and are the ultimate foundation upon which any system of land utilization must be based.

I. THE PHYSICAL BACKGROUND

The rock material of almost the whole of the peninsula is the Red Marls Series of the Lower Old Red Sandstone. A narrow strip of land along the parish boundary to the north extends on to outcrops of still older rocks (Silurian and Ordovician—see Map 1). All these rocks are greatly folded and faulted, as may be seen in any cliff section around the coast of the peninsula. Locally the dominant element in the system of folds is a sharp synclinal fold whose axis runs across the peninsula from Watwick Bay on the east to Welshman's Bay on the west. To the north of this line the strata dip steeply southward; to the south of it they dip as steeply in the opposite direction. The syncline is continued eastwards across the entrance of Milford Haven, through Angle towards Pembroke and beyond, where younger rocks (Carboniferous) are preserved along its axis. In Dale the northern flank of the syncline is interrupted by a great E—W fault (the Ritec fault which underlies Milford Haven). Dale Valley coincides approximately with the line of the fault and was probably developed along the zone of structural weakness.

Except along the coastal cliffs where the strata are revealed in section there is little evidence of their disturbed condition, for the surface of the peninsula is a remarkably uniform plateau from 150 feet to 200 feet above present sea level, cut clean across the twisted and tilted beds of rock regardless of their structure.

The plateau, ending abruptly at the sea cliffs except for the easier slopes down to the Pickleridge and Dale Beach shingle banks (Map 1), extends over a large area of coastal Pembrokeshire. It is a marine erosion surface of Pliocene or late Tertiary age. It had become a land surface raised above sea level long before the onset of glacial conditions of the Ice Age, for patches of ice-borne boulder clay have been deposited on it. These deposits occupy much of the plateau surface of the Dale peninsula (Map 1). A post-glacial deposit of "head" (a product of "solifluction", the movement downhill of soil and frost-shattered rock waste in fluid or sludge form under arctic conditions) occupies the floor of the Dale Valley at its western end. A small tongue of alluvium lies in the eastern end of the valley.

The peninsula is drained by a few small streams which almost all flow to the east and south coasts. These valleys are deeply incised in the plateau surface and are narrow and steep-sided, especially in their lower parts where the streams usually have steep gradients. The Dale Valley is a broad trench across the peninsula (see Plate), falling from 100 feet at West Dale Bay to sea-level at Dale Beach. The size of this valley bears no relation to the small amount of drainage it now discharges. Groom (1956) is of the opinion that a depression along the line of the present Dale Valley was formed by marine, probably tidal, erosion during the emergence of the 200 foot platform when for a period the coastline was being established at a slightly higher level than that of today. By the time this area was glaciated a well-developed channel existed along the line of the present Dale Valley.

The soils of Dale parish are mostly those derived from the weathering of the Old Red Sandstone. They are renowned for fertility, particularly those which are treated with lime. Davies (1949) describes these soils as "a strong red loam with an average thickness of 10 inches, containing a high proportion of fine sand and silt". The soils of the Boulder Clay areas, having a high proportion of clay and few "boulders", are heavy and not naturally well-drained. Poorer, thinner soils overlie the older rocks in the north of the parish and rich alluvium occupies the lower part of Dale Valley. The extent to which the soils of the area are impregnated with salt from wind blown spray has not yet been determined.

The climate of Dale has been described by Oliver (1959). It may be noted here that the position of the parish, its peninsular form and the influence of the North Atlantic Drift combine to give an equable, maritime climate similar to that of the Scilly Isles, and favourable to agriculture. Frost is rare; rainfall is low and evenly distributed through the year; relative humidity is high. Dale has more sunshine than any other place in Wales. In an average year 32 gales occur.

II. LAND USE UP TO THE MID-NINETEENTH CENTURY

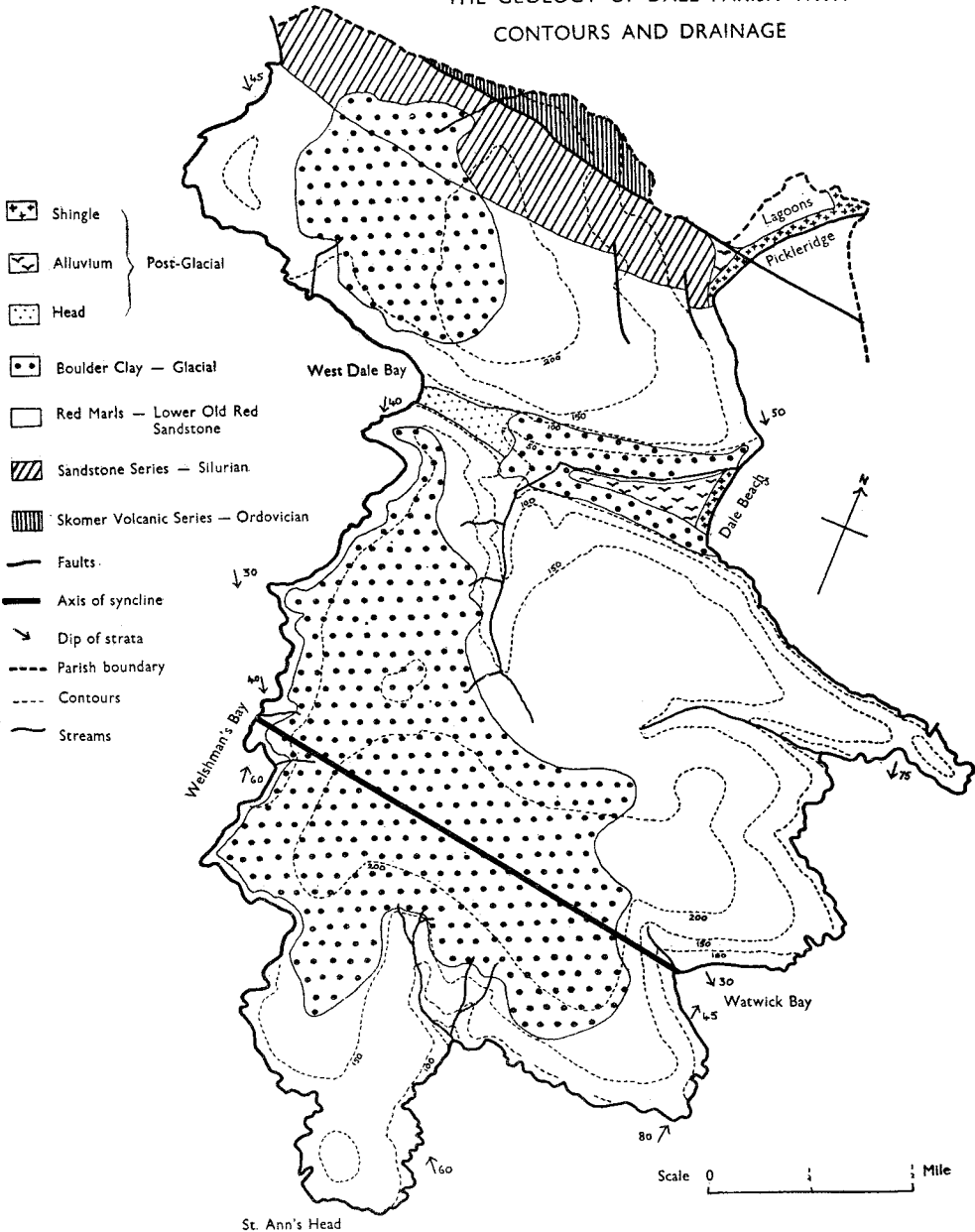
The first substantial record of land use and farming practice in Dale parish is from the Tithe Apportionment Survey of 1847; before that date we can only assume that land use in Dale was similar in its general characteristics to that of the rest of South Pembrokeshire.

The Norman Period

During the conquest of South Pembrokeshire by the Normans, starting at the

MAP I.

THE GEOLOGY OF DALE PARISH WITH
CONTOURS AND DRAINAGE



end of the eleventh century, the dispossessed Welsh were driven to the north of the county leaving Norman overlords free to impose the manorial system. Tribalism was replaced by feudalism.

The Hundred of Roose, in which Dale parish lay, was colonized early in the twelfth century and immigrant Flemish labour was much used. Typically the centre of a manor was a nucleated village protected by the lord's stronghold. Phillips and Warren (1914) mention that Dale Castle was originally built as a semi-fortified manor house at this time, possibly by the de Vale family.

Open township fields were created around the villages and holdings were composed of scattered strips. Howells (1956a) suggests that once the need for protection had passed, isolated farmsteads with compact areas of land, the nuclei of many of the later freeholds, were established beyond the open fields. Other holdings or "assarts" were formed by intakes from the waste as population increased. Howells also mentions that little is known about the method of farming in medieval Pembrokeshire but both two- and three-field systems and the infield-outfield system appear to have existed and evolved side by side.

End of Sixteenth Century to mid-Nineteenth Century

George Owen (1603) says that corn "maintaineth most people and requireth most hands to labor" and was bringing more prosperity to the county than livestock. Howells (1955) basing his assumptions on alternative evidence in the large collection of inventories of probate records relating to the Diocese of St. Davids and in the port books of Milford for the period 1559-1603, has come to a different conclusion. He says that "farmers of the late sixteenth century and early seventeenth century had more money invested in live-stock than in crops". In such an isolated area every farmer tried to be self-sufficient; basic requirements had to be met locally so that "a necessary minimum of land was kept under the plough". In the Hundred of Roose, oats and wheat were the most important crops with barley a fairly close third; small quantities of rye, peas and beans were grown.

Wool, butter, cheese and store cattle were exported to the neighbouring counties and to England and Ireland. Agricultural surpluses (except livestock) could be exported only by sea and in 1565 the Commission to Suppress Piracy described Dale as the largest village on the north shore of the Haven.

At the end of the eighteenth century Hassall (1794) wrote that mixed husbandry was the rule, most farmers having dairy and store cattle and a proportion of tillage. He stressed the slow progress of agricultural improvements compared with those made in England. Few had introduced turnips or green crops or had drained land. There were no systematic rotations, roads were inadequate, farm buildings neglected and in disrepair, agricultural implements old-fashioned and inefficient and probably the main obstacle to progress was the lack of markets.

Part of the fault lay in the system of land tenure. Howells (1956b) states that from about 1580 to 1620 most land in the "Englishry" was held by customary tenure and in Roose censory tenants were in the majority. They held land at best for life and usually from year to year, so that security was lacking. There were very few freeholders with their complete security. Howells adds that after the sixteenth century leaseholders became more common, usually holding for 21 years, a tendency favoured by landlords as it gave them more control over

their land. Short leases were bad as the fields were plundered for quick returns.

Elizabethan farmers were aware of the problem of soil exhaustion as is apparent from Owen's (1603) remark that "A man doth sand for himself, lime for his son and marl for his grandchild". Hassall (1794) says that lime was the most general manure and it was probably the mainstay of agricultural manuring from about 1700 to 1900, the limestone being quarried in large quantities at West Williamston in the higher reaches of the Haven. Coal also outcrops in the upper reaches of the Haven and together with the limestone, was shipped coastwise to be burnt in the many little kilns all sited in sheltered bays and inlets just above higher water mark to which access was possible by cart. Dale parish had three kilns—two at the end of the Pickleridge and one at Castlebeach. According to the Census returns, there was still one limeburner living in Dale in 1851, but Strahan *et al.* (1914) suggests that by about 1900 the new post-Industrial Revolution chemical industries and rail transport had killed this old technique.

Howells (1956a) has deduced from several different sources that outside Crown manors the open fields with their intermixed holdings survived late in the "Englishry"; he adds that in 1624-5 a surveyor of Crown Lands in Roose suggested the benefits to be derived from sorting, exchanging and enclosing.

According to Hassall (1794), the process of evolution from open fields to consolidated farms lasted on the average 200 years but most of the land was enclosed and hedged by this time. A map based on a 1767 land survey of Marloes in Davies (1939) shows that parish to be unenclosed but the Tithe map of 1847 for Marloes shows that by then the whole area had been enclosed, trackways fenced and extended and rough pasture improved. These new enclosures were very small. When the movement started in Dale is unknown, but the 1847 Tithe map for Dale shows that enclosure had definitely taken place north of Dale Valley, where the enclosures also were very small; it does not show fields south of the Valley, but only the boundaries round each homestead and its compact land. On the first edition of the Ordnance Survey 6-inch map of 1864 field divisions are drawn south of Dale Valley. They enclose rectangular fields larger than those in the north of the parish.

The field divisions constructed at this time were usually made by building two rough parallel walls about 6 ft. high and filling the space between them with earth. Such substantial walls gave good shelter to animals and crops. They remain today.

Farms at the time of the 1847 Tithe Apportionment Survey

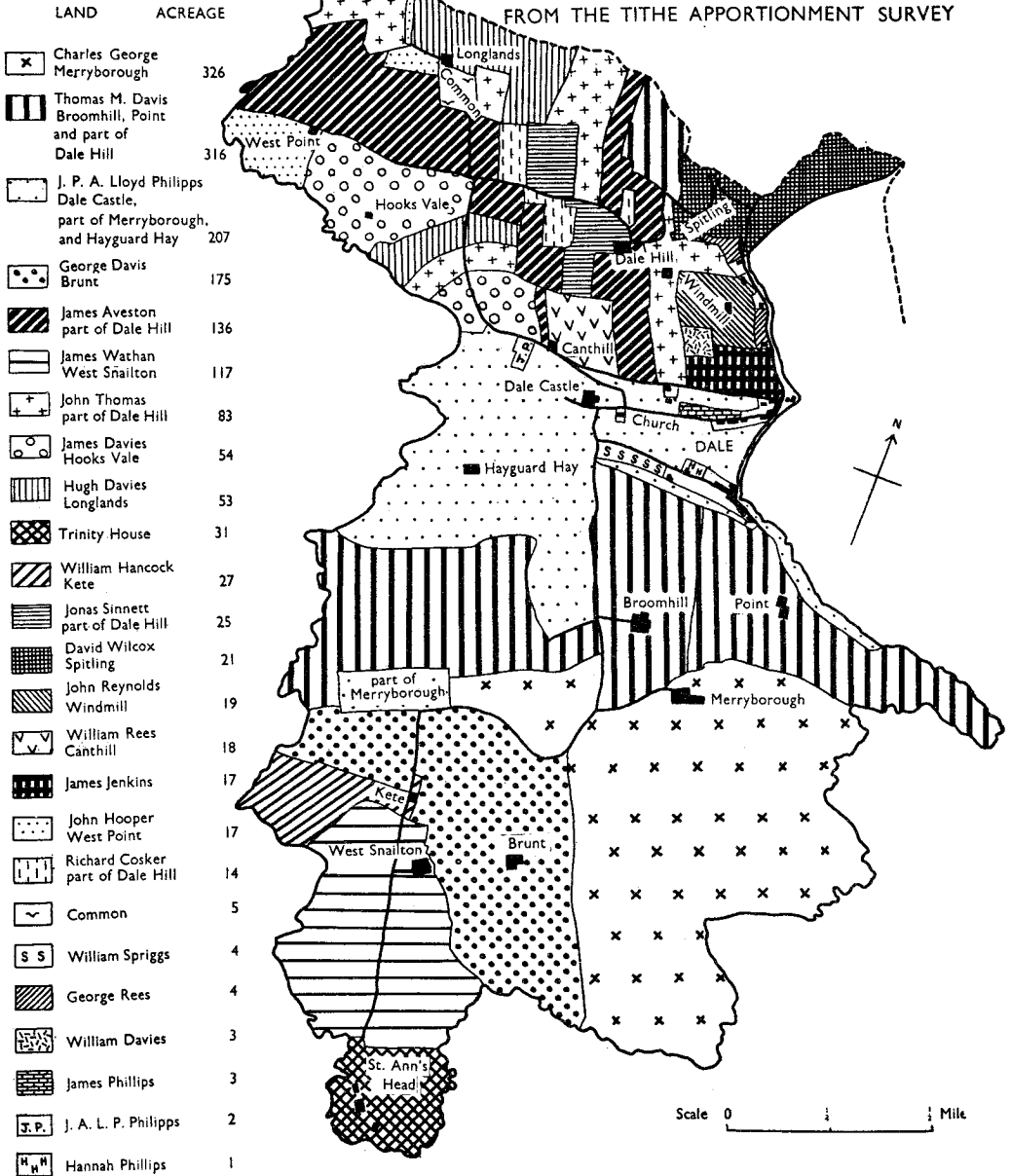
The map of occupancy of land drawn from the records of the Title Apportionment Survey in 1847 (Map 2) shows the number, size and distribution of farms and the sharp contrast between the smaller scattered holdings to the north and larger compact farms to the south of Dale Valley.

This contrast must be related to the past system of land tenure. It seems likely that the land to the north lay in the original open fields containing the intermixed holdings of the tenant farmers and that the 1847 distribution represents the extent to which exchange and consolidation had taken place. These enclosed fields are small and some are strip-shaped, perpetuating part of the ground plan produced by an open field system. The larger more compact

MAP 2.

OCCUPANCY OF LAND IN DALE PARISH IN 1847

FROM THE TITHE APPORTIONMENT SURVEY



farms to the south are probably descendants from farms which lay outside the open township fields, and have always been compact.

The number of farms and their acreages listed on the map may be summarized as follows:

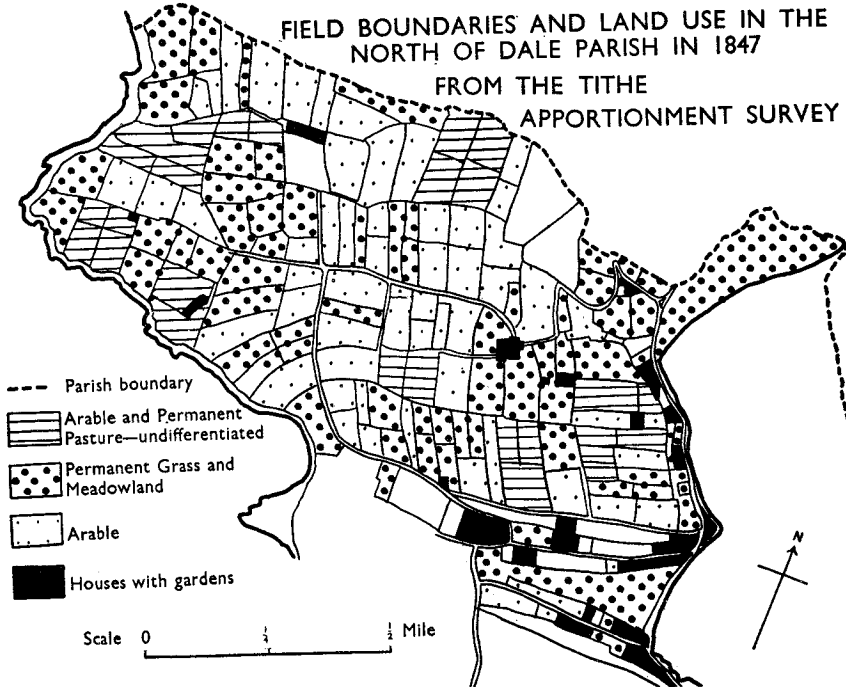
	Number
Holdings 1 to 5 acres	6
Farms 5 to 50 acres	8
Farms 50 to 150 acres	5
Farms 150 to 300 acres	2
Farms over 300 acres	2

J. P. A. Lloyd-Philipps owned 93 per cent. of the land. A. C. Bowen, who was not a resident of Dale in either the 1841 or 1851 Census, owned the land farmed by John Thomas ($4\frac{1}{2}$ per cent. of the total). The remaining $2\frac{1}{2}$ per cent. was held by Trinity House (St. Ann's Head), by four owners of less than 2 acres or was under roads, church and cemetery.

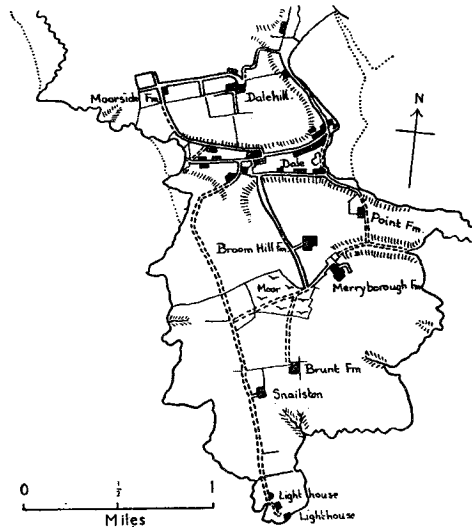
The 1847 Tithe map notes the details of land use only north of Dale Valley (see Map 3). The influence of boulder clay is obvious. Lands to the south of the valley are described as "homestead" and "lands" except for the "part of Merryborough" (see Map 1) which is arable.

The rural settlement pattern was continually changing as rough pasture was

MAP 3.



DALE PARISH IN 1814
FROM THE O.S. 2" TO 1 MILE; SHEET 182



Reproduced from the Ordnance Survey Map with the permission of the Controller of H.M. Stationery Office, Crown copyright reserved.

improved and land consolidated. The earliest map of the parish, the Ordnance Survey map, 2 inches to 1 mile, of 1814, shows only seven farms including a Moorside Farm (see Map 4) which also appears on the first edition of the one-inch O.S. map of 1818 and on Campbell's one-inch map of 1827 but not on the 1847 Tithe map, indicating perhaps that a track of "moor" or rough pasture beyond the farm had been improved by the latter date. The 1818 map shows the same farms as the map of 1814 and marks the same cottages in the west end of Dale Valley and a cottage at Castlebeach, which was probably occupied by the limeburner. In addition to these settlements Campbell's map of 1827 shows a Longlands Farm immediately to the north of Dale Hill, a large number of cottages at Dale Hill and cottages lining the road from the village to Point Farm. On the one-inch Ordnance Survey map of 1839, Hayguard Hay appears for the first time, and the road from the village to St. Ann's Head was still running west of it. Canthill also appears for the first time. The 1847 map shows the addition of Kete, Moorland, Hook Vale, West Point, Windmill and a new site for Longlands further west. It indicates also the disappearance of the cottages at Dale Hill and between the village and Point Farm. Canthill* was marked on the first edition of the 6-inch Ordnance Survey map of 1864 but by the time of the second edition of the 6-inch map in 1908 both Canthill and West Point had disappeared.

* A modern Canthill exists in the village to-day, but on another site.

By the mid-nineteenth century, then, new areas were being cultivated and new methods of farming were being introduced. But Dale was still isolated and remained a self-sufficient agricultural area with a self-contained village of craftsmen and tradesmen. These included a miller and a maltster named in the 1851 Census. This Census also shows that there were 30 agricultural labourers living in the village and 14 others living on farms.

III. TRENDS IN LAND USE FROM 1867 TO 1956

Official statistics of the Ministry of Agriculture, Fisheries and Food are available for the parish from 1867 to 1956 and these indicate changes which have taken place in Dale in comparison to Pembrokeshire as a whole. Up to the middle of the nineteenth century each farm was normally a self-contained economic unit. After that time there was a gradual change from self-sufficiency to dependence on outside markets.

	Dale (1,825 acres)					Pembrokeshire as a whole				
	1870	1900	1930	1949	1956	1870	1900	1930	1949	1956
Permanent grass ..	39	37	29½	12½	15	40	50	52	35	38
Arable ..	42	39	34	38	40	31	26	21	34	34
Total cultivated area	81	76	63½	50½	55	71	76	73	69	72
Rough pasture (in sole occupation) ..	—	—	20	6	7	—	8	17	17	13
Other rough pasture	—	—	9	8	14	—	—	—	—	—
Total rough pasture	—	—	29	14	21	—	—	—	—	—
Land Agriculturally Unproductive ..	—	—	3	31	19	—	—	—	—	—
Houses with gardens	—	—	2	2	2½	—	—	—	—	—
Woodlands ..	—	—	2½	2½	2½	—	—	—	—	—

General trends (Fig. 1)†

As rough pasture was improved, the total cultivated area increased through the nineteenth century up to 1890, not only in Dale but throughout Pembrokeshire and Wales. From 1900 to the 1930s the total cultivated area fell gradually, due initially to the severe agricultural depression of the nineties which led to an exodus of labour to the industrial towns of South Wales. Arable land declined as livestock increased and as permanent pasture reverted to rough pasture. From 1941 the acquisition of land by the War Department caused a further rapid decrease in the cultivated area but from 1948 derequisitioning reversed the process.

Arable

The total acreage of arable has varied little from 1867 to the present day, never falling below 32 per cent. and never rising above 44 per cent. of the total area. This high figure was maintained during 1941-8 by ploughing up per-

* Official statistics were only available for Permanent grass, Arable and Rough Pasture (in sole occupation). The other figures have been calculated from surveys of the parish, i.e. the 1931-33 carried out by the head teachers of Dale and Marloes Schools for the Land Utilization Survey and the others by the staff of Dale Fort.

† Figs. 1 to 8 which follow are based on official statistics of the Ministry of Agriculture.

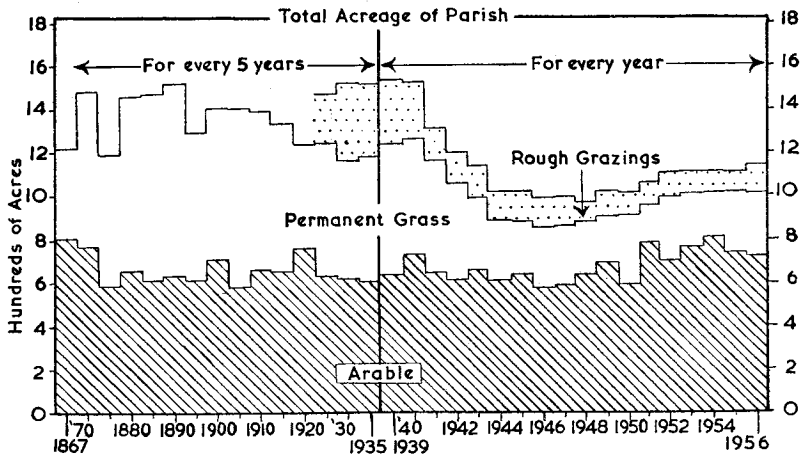


FIG. 1.
Changes in land use in Dale Parish between 1867 and 1956.

manent grass and improving rough pasture. The first arable to appear on derequisitioned land was 30 acres at Kete in 1951 and about 7 acres on the aerodrome in 1952. By 1956 arable again accounted for 40 per cent. of the total and very few parishes in Pembrokeshire have more.

The highly fertile and well-drained soils are well adapted to arable cultivation and the climate particularly favours arable crops, especially oats. Only when road communications improved did the export of milk become a profitable alternative. The land use maps for 1931-33, 1949 and 1958 (Maps 5, 6, 7) show that the distribution of arable has changed little except for the war-time disruptions already discussed.

Although the acreage under arable remained more or less constant from 1867 to 1956, the composition of cropping changed considerably. This reflects the breakdown of self-sufficiency following the improvement of roads and the opening up of markets, the introduction of more scientific methods, and the increasing influence of government policy on farming practice. In the 1930s, more feedstuffs for livestock were cultivated and cash crops were first introduced (Fig. 2).

The most striking change is in cereals (Fig. 3), for which the total area decreased from nearly one half the arable in 1870, to one quarter of it in 1956. Until 1890, barley was the most important cereal but was then superseded by oats, and the acreage has continued to fall ever since until today it is negligible. Wheat, second to barley in 1870, decreased rapidly from 1875 to 1895 and has never occupied 20 acres since. Neither wheat nor barley is as well suited to the climate as oats. These cereals were little cultivated in the district after improved communication made it economical to import them. Oats increased very rapidly after 1890 reaching a peak in World War II. Today this crop occupies a quarter of the total arable acreage.

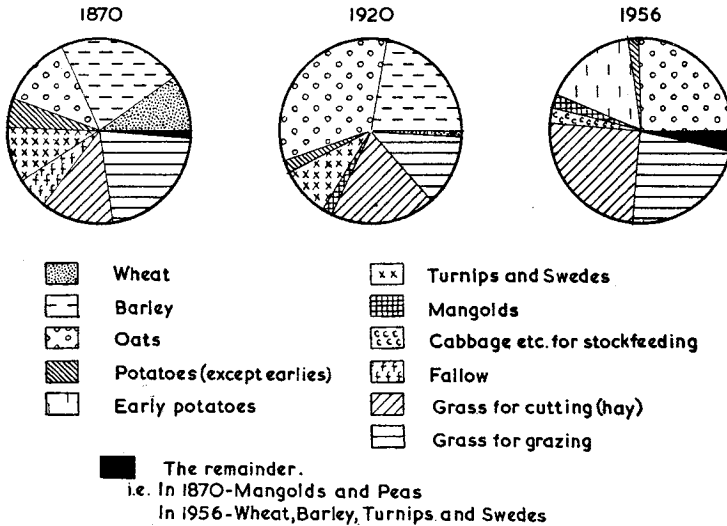


FIG. 2.
Composition of the arable acreage in Dale Parish.

The old practice of summer fallowing had become exceptional by 1900 having been replaced by the cultivation of root crops, especially turnips, swedes and mangolds (Fig. 2). Rye, peas and beans had virtually disappeared as farm

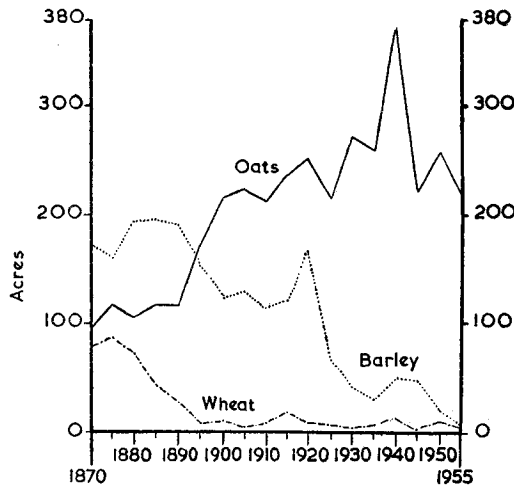






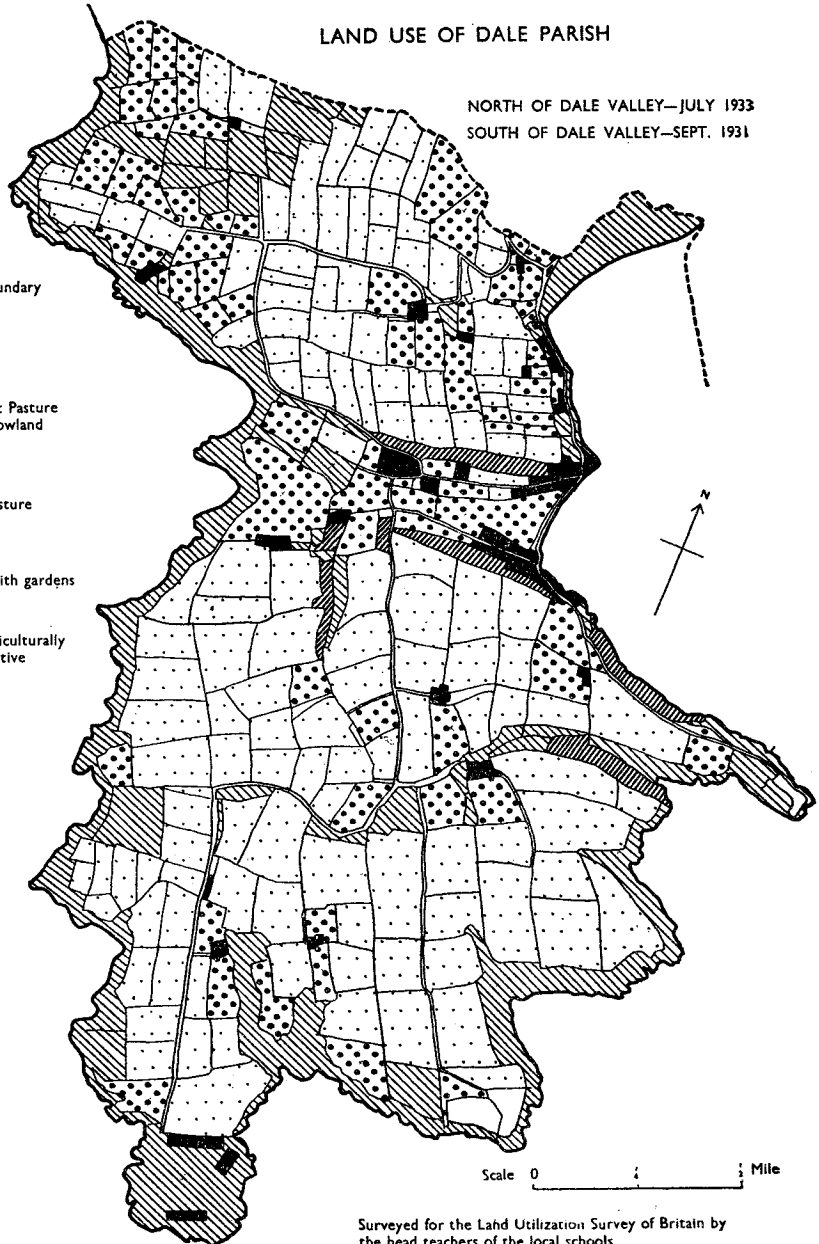


FIG. 3.
Changing area under cereals in Dale Parish from 1870 to 1955.

LAND USE OF DALE PARISH

NORTH OF DALE VALLEY—JULY 1933
SOUTH OF DALE VALLEY—SEPT. 1931

- Parish Boundary
-  Woodland
-  Permanent Pasture and Meadowland
-  Rough Pasture
-  Houses with gardens
-  Land Agriculturally unproductive
-  Arable



Surveyed for the Land Utilization Survey of Britain by
the head teachers of the local schools

crops; 3 acres of peas in 1870 were the last recorded. By 1956, mangolds, cabbage and kale (grown for the first time in 1935), turnips and swedes together accounted for 6 per cent. of the arable and were all grown for stockfeeding (Fig. 4).

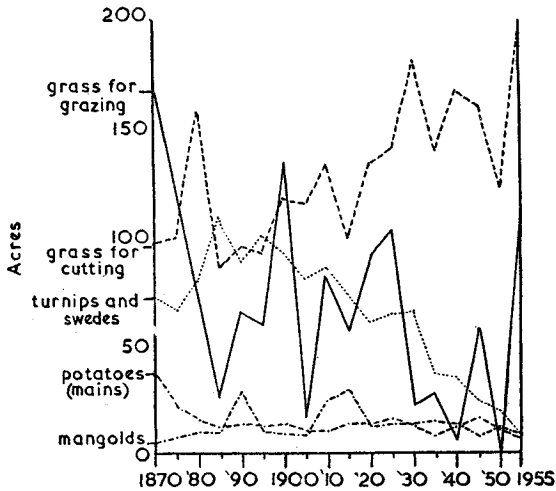


FIG. 4.
Changes in acreages of certain crops in Dale from 1870 to 1955.

The fluctuating acreage under grass has increased from one-third of the total in 1870 to almost one-half in 1956 (Figs. 2 and 4). The climate with its high humidity, relatively even rainfall and winter temperatures above 41°F. encouraged grass to grow almost throughout the year in Dale.

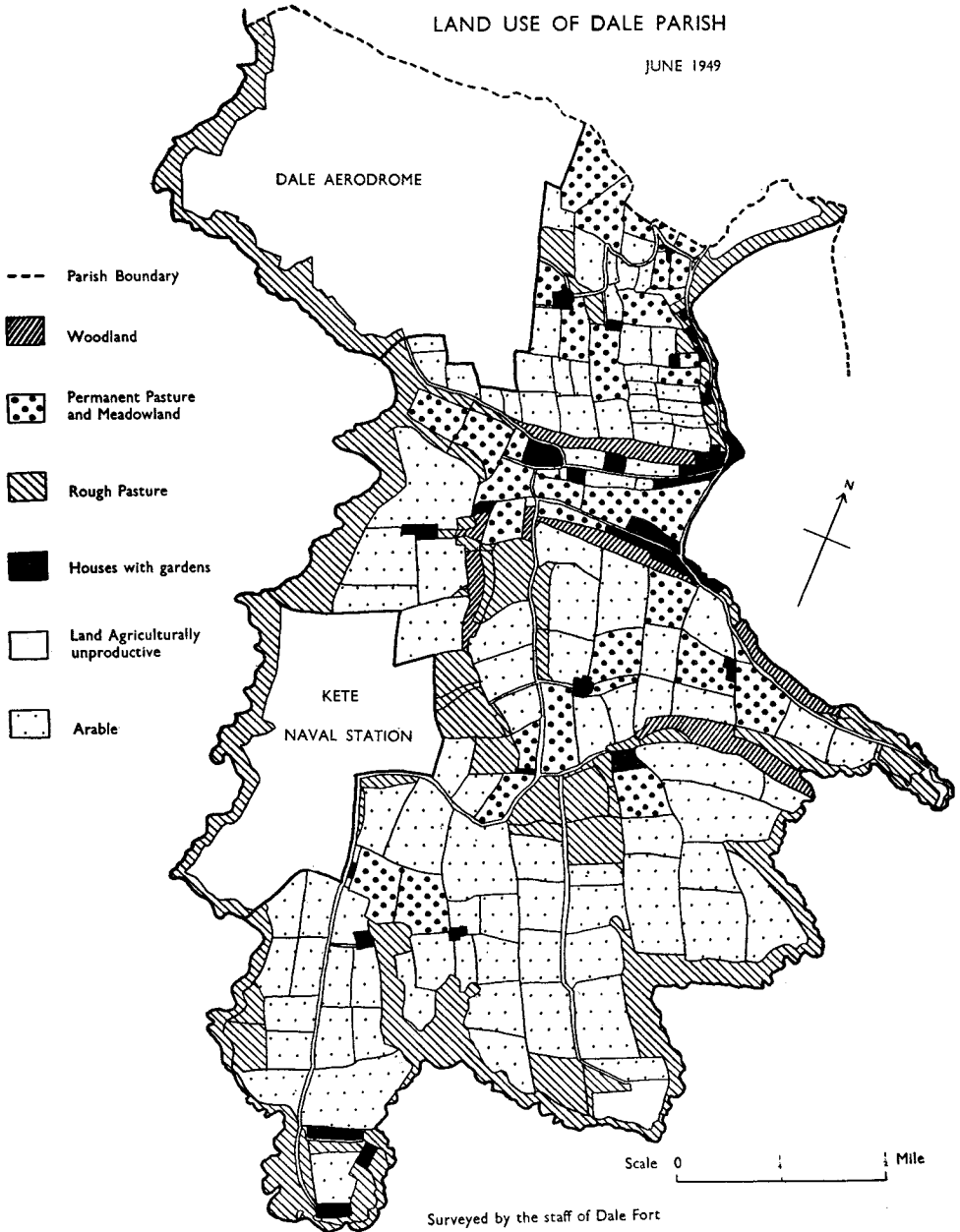
Stimulated by a government subsidy, sugar beet was first grown on a commercial scale in 1932. According to Davies (1939) Dale was one of the areas where soil and climate were ideal for this crop and the acreage increased enormously up to 1934, when it fell abruptly on the reduction of subsidies. A rebate given in 1937 brought some recovery but any increase was checked by the cost of transport to the nearest factory (160 miles away). By 1935 only 49 acres were grown in Dale and in 1940 only 9½ acres. Sugar beet had disappeared by 1943.

Potatoes had always been grown in the days of self-sufficiency but the acreage fell after 1870 (Fig. 4). In the 1930s experiments indicated that Pembrokeshire could become an important county for "earlies" (Davies, 1939), and indeed these "earlies" have since affected the agricultural industry more than any other crop, not only in Dale but in the county as a whole. The early incidence of spring and the rare occurrence of frost were ideal conditions. At the same time, the soil was suitable, and markets in South Wales were available. Dale pioneered this crop with a few acres in 1935 but early potatoes remained virtually unknown in the county until 1937, when 200 acres were planted. In 1957 over

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MAP 6.

LAND USE OF DALE PARISH

JUNE 1949



7,000 acres were planted. Fig. 5 shows the increase in Dale, where "earlyies" occupied 17 per cent. of the arable in 1956 (*cf.* 5 per cent. for Pembrokeshire).

Market gardening was started in Dale in 1925-6 when glass-houses occupying a quarter of an acre were built for growing tomatoes. This proved successful as a commercial enterprise. In 1935, $3\frac{1}{2}$ acres, including the quarter acre under glass, were being used for market gardening and the acreage is the same today. This commercial production of early horticultural produce, especially lettuces and tomatoes, exploited the highly favourable climate. The site chosen is on the gently sloping, well-drained south-facing side of Dale Valley which provides a considerable degree of shelter.

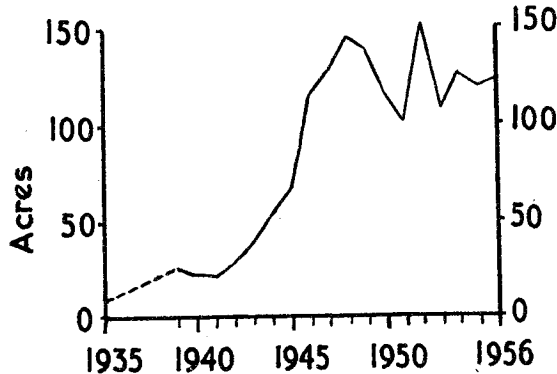


FIG. 5.
Change in acreage of early potatoes in Dale from 1935 to 1956.

Permanent Grass

The total acreage of permanent grass increased up to 1890 as rough pasture was improved and then fell steadily as the improved grassland reverted during and after the great agricultural depression of the 1890s. Quite different was the fall from $29\frac{1}{2}$ per cent. in 1930 to $12\frac{1}{2}$ per cent. in 1949, for this is accounted for by the needs of the War Department and the ploughing up of grassland for tillage. The changing distribution of permanent grass is shown on Maps 5, 6 and 7.

Total numbers of cattle have increased slightly in Dale from 1867 to 1956 (Fig. 6). This is consistent with the general increase all over Pembrokeshire due to the expansion of markets for dairy produce and fat cattle in the industrial towns of South Wales in the nineteenth century.

Store cattle have always outnumbered dairy cows in Dale. Until the 1950s, milk was made into butter and the small supply was marketed in Milford and Haverfordwest. In Pembrokeshire, milk production was greatly encouraged in the late 1930s and the Milk Marketing Board, set up just before the war, greatly influenced local farming practice by assuring a stable and economic price to the farmer and hastened widespread turnover from butter production to milk export. The war greatly stimulated this and collection by lorry rapidly developed, reaching further each year into the outlying districts. But Dale was

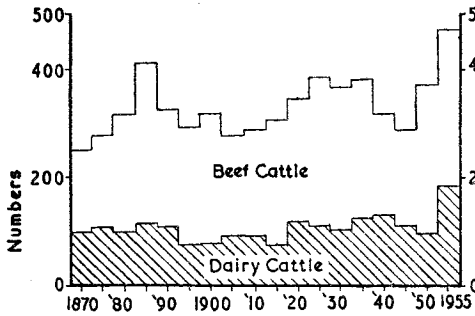


FIG. 6.
Changes in total numbers and in the proportions of Beef and Dairy Cattle in Dale from 1870 to 1955.

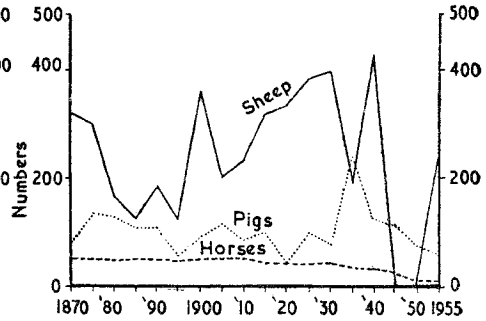


FIG. 7.
Changes in numbers of sheep, pigs and horses for agricultural purposes in Dale from 1870 to 1955.

not served in this way until 1953. Since then the number of dairy cows has increased noticeably, but beef cattle are still the more important.

Sheep have always been less important than cattle and their numbers have fluctuated annually (Fig. 7). After 1940, the number fell heavily due to the requisition of the aerodrome and the increasing cultivation of early potatoes which clashes with the spring grazing of ewes. Pigs and poultry have always formed part of the stock of every farm, though in no great numbers. Horses for agricultural purposes were kept in large numbers to a late date in Dale, there being 40 in 1930 and 18 in 1945. There is none in 1958.

Throughout the period then, the dominating factor affecting farming was the opening of markets following the development of the South Wales coalfield and attendant urban agglomerations and the linking up of these areas to West Wales by railway after the 1850s and later by road transport improvements. By 1939, production for market had almost entirely replaced self-sufficiency and the effect of World War II was to stimulate this tendency further.

Rough Pasture (Fig. 1)

Official statistics are available for rough pasture (in sole occupation) only from 1925; rough pasture (not in sole occupation) has been calculated approximately from land use surveys of the parish. As the total cultivated area shrank from 1890 to 1930, the area of rough pasture must have increased. A maximum was reached in 1930 when 20 per cent. of the total area was rough grazings "in sole occupation" and the remainder, about 9 per cent. was mainly cliff lands.







By 1949 the grazings "in sole occupation" had dropped to 6 per cent. as land was requisitioned by the War Department and part of the area "not in sole occupation" especially at St. Ann's Head was improved (Map 6).

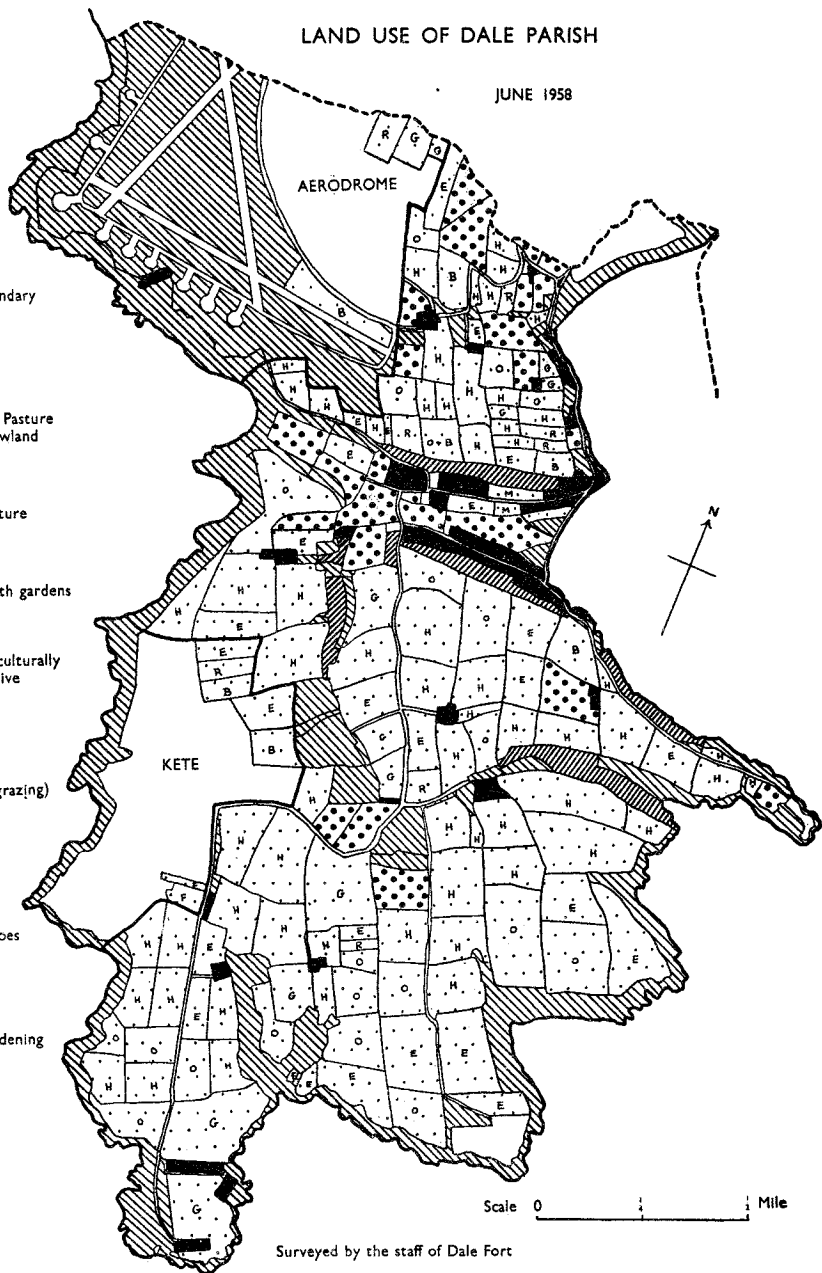
By 1956, there had been a very slight increase of grazings "in sole occupation" as fields around Moorland Cottage reverted back to the unimproved status. Rough pasture "not in sole occupation" had increased to about 14 per cent. by 1950 after the derequisition of the aerodrome (Map 7).

MAP 7.

LAND USE OF DALE PARISH

JUNE 1958

- Parish Boundary
-  Woodland
-  Permanent Pasture and Meadowland
-  Rough Pasture
-  Houses with gardens
-  Land Agriculturally unproductive
-  Arable
 - G Grass (for grazing)
 - H Hay
 - O Oats
 - B Barley
 - E Early Potatoes
 - R Roots
 - F Fallow
 - M Market Gardening



Surveyed by the staff of Dale Fort

Land Agriculturally Unproductive

From 1867 to 1940 there can have been but little change from the 3 per cent. of the total in this category. West Blockhouse and Dale Fort were both built in the 1850s. Roads, church, school and cemetery accounted for the rest (Map 5). The requisition of land by the War Department after 1940 produced the increase to 31 per cent. by 1949 (Map 6). The aerodrome was taken over first in 1941 and then Kete in 1942-3. About two-thirds of the aerodrome was de-requisitioned in 1949-56 and one-fifth of Kete had come under cultivation by 1950. By 1956, $18\frac{1}{2}$ per cent. was still agriculturally unproductive of which $15\frac{1}{2}$ per cent. was War Department property (Map 7).

Houses with Gardens and Orchards

The distribution of land in this category coincides almost exactly with the rural settlement pattern and remained about 2 per cent. of the total from 1867 to 1951 (Maps 5, 6). In 1951 it increased by about $\frac{1}{2}$ per cent. as naval married quarters and council houses were built in the village (Map 7).

Woodland

Woodland has covered about 2 per cent. of the total for the whole period. Strong sea winds and gales retard free growth and woodlands are confined to sheltered valleys, where the tree tops are planed off flat by the wind restricting their growth as they reach the plateau level. Deciduous trees predominate, especially ash and sycamore.

Farm Labour

The nineteenth century industrial development affected population and labour. The Census returns show that the Pembrokeshire population had increased from 1801 to 1861 and then gradually declined, largely owing to migration to the mines. Ashby and Evans (1944) say that in Wales the total male farming population declined by 20 per cent. from 1850 to 1870. They add that the number of agricultural labourers fell from 73,000 in 1851 to 32,000 in 1931. The Ministry of Agriculture, Fisheries and Food labour figures are available for Dale only from 1925, since which time the number of regular workers has steadily diminished. Another change is the great increase in seasonal labourers (mainly women) employed for planting and picking early potatoes (Fig. 8).

IV. PRESENT DAY FARMING PRACTICE

In 1956, 55 per cent. of Dale was cultivated compared with 72 per cent. for Pembrokeshire as a whole. This low percentage is largely due to continuing military occupation. In Dale, however, nearly three-quarters of the cultivated area is arable while for Pembrokeshire the figure is less than a half.

The Farms

About 78 per cent. of the land is owned by the Dale Castle Estate, and this includes all the farmland except St. Ann's Head. Sixteen per cent. is owned by the War Department, just over 1 per cent. by the West Wales Field Society and just over 2 per cent. by Trinity House. Nearly 3 per cent. is occupied by roads, church and cemetery or by privately owned houses.

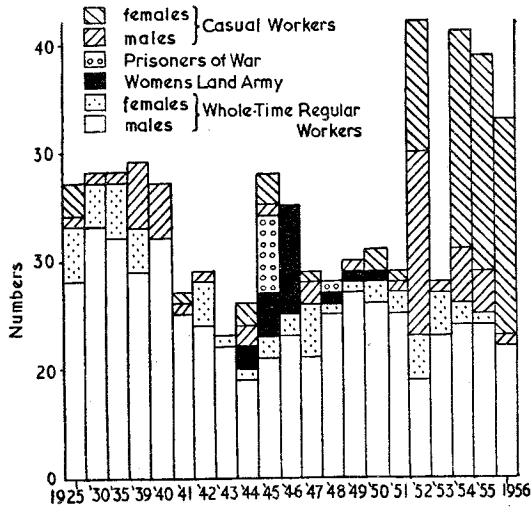


FIG. 8.
Numbers and type of farm labourers in Dale from 1925 to 1956.

The farms today are larger and more compact than they were in 1847 and as a result there are fewer of them. A comparison of the 1847 and 1958 maps of occupancy of land brings out clearly the extent of exchange and consolidation of land and the changes in farm boundaries (Maps 3 and 8). The average farm is, however, very small compared with the average for England and Wales. The war brought many changes as Longlands, Hook and Kete farms, together with 80 acres of Upper Dale Hill, disappeared with the requisition of land by the War Department, and Snailston farmhouse was bombed.












The number of farms and their acreages are listed on Map 8 but may be summarized as follows:

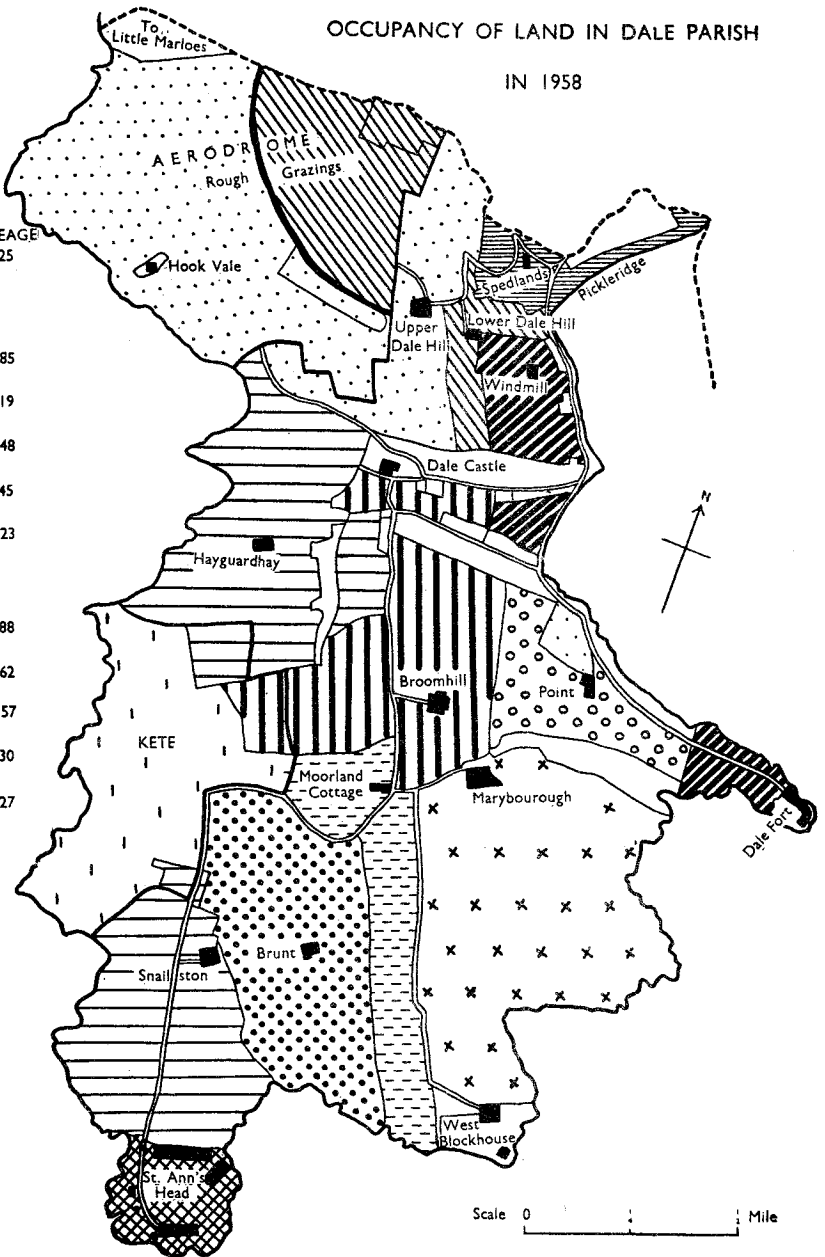
	Number
Farms 5 to 50 acres	2
Farms 50 to 150 acres	6
Farms 150 to 300 acres	2
Farms over 300 acres	1

Thus in 1958 there were only 11 farms of over 5 acres compared with 17 in 1847.

All the farmers are tenants, a direct result of the Norman feudal system established in the parish nearly 800 years ago. In general, the farms are perhaps short of capital and the modernizing of farmhouses and buildings presents special problems; since 1953, however, mains water and electricity have been connected. Agricultural labour is scarce in Dale as in all Pembrokeshire. Men are attracted away from the land by higher wages elsewhere and only twelve Dale men are now farm workers, fewer than ever before except during the wars. The Milford Haven industrial development will probably accentuate the problem.

OCCUPANCY OF LAND IN DALE PARISH
IN 1958

OCCUPIERS OF FARMS	ACREAGE
 L. Williams (including 225 acres of rough grazings on the aerodrome)	325
 C. Warlow	285
 W. G. Morris	219
 B. Warlow	148
 W. Davis	145
 W. Thomas (including 88 acres of rough grazings on the aerodrome)	123
 B. Edwards	88
 Mrs. J. Davis	62
 J. Davis	57
 W. G. Williams	30
 H. Reynolds (including 9 acres on Pickleridge)	27



Crops

Farming is mixed and most farms have something of everything. Grass predominates and covers nearly three-quarters of the total cultivated area. The farmers probably gain their main income from milk and the rearing of beef while early potatoes have become an important cash crop.

Main crops as a percentage of Total Arable Acreage in 1956

Crop	Dale	Pembrokeshire
Wheat	$\frac{1}{2}$	1
Barley	$\frac{1}{2}$	6
Oats	25	18
Potatoes (1st earlies)	17	5
Potatoes (2nd earlies and mains)	2	1
Mangolds	3	$\frac{1}{2}$
Turnips and Swedes (for stock feeding)	$\frac{1}{2}$	1
Cabbage and Kale (for stock feeding)	3	4
Temporary grasses { for mowing (hay)	25	28
and clover { for grazing	23	22
Total temporary grasses and clover	48	50

With the exception of land under potatoes and market gardening, all the arable is sown with crops to be fed to stock; the table shows the proportions. Even grains are crushed for feedingstuff except the little sometimes sold for seed.

Evidence of the importance of early potatoes in Dale is the fact that 17 per cent. of the arable is planted with them compared with 5 per cent. for the county. They are set throughout February and harvested throughout June. They are usually ready before the Lancashire and Lincolnshire "earlies", at much the same time as the Cornwall crop, but after those grown in the Channel Islands.

The early potato trade creates a problem of casual labour for planting and harvesting. This seasonal demand is satisfied largely by housewives from Milford. On a farm of 150 acres a gang of fifteen may be required for setting and up to 30 to 40 for harvesting. Transport is provided by the farmers and pay is at the rate of 3s. 6d. an hour.

The early potato market is sensitive and prices vary from day to day. On the first of June an average yield of 3 tons per acre might fetch £60 or more a ton, but by the 7th, with supplies coming forward from less favoured areas, the price may be down to £20. Once the price falls it may pay to leave the crop in the ground to fatten. Locally some feel that rather more co-ordination amongst wholesalers, coupled perhaps with controlled lifting, would benefit everybody by giving security. Dale potatoes are marketed in Liverpool and Manchester, Leeds, Birmingham and Shropshire, and the industrial towns of South Wales. Seed potatoes come from Scotland with a few from Ireland.

The $3\frac{1}{2}$ acres of market gardening in Dale account for almost all there is in Pembrokeshire. A quarter of an acre is under glass, mainly for tomatoes and cucumbers.

The tomatoes are ready by mid-April at the same time as the Channel Island crop and four weeks before those from Cheshire. Lettuces and other salad crops and vegetables are grown outside. All transport is by lorry and the produce is marketed in Pembrokeshire and the neighbouring counties.

Rotations vary from farm to farm and with the weather but show certain general features. The most usual is:

1st year	February to June—early potatoes
		June to December—green or root crop
2nd year	early potatoes (if weather is dry) or oats (if weather is wet)
3rd, 4th and 5th (and even 6th) years	clover and grass

An alternative is to have two years of oats followed by a green or root crop and then the 2 or 3 years ley.

Lime is universally applied to the land and encouraged by subsidy. It is usually spread mechanically by the suppliers in quantities of 2 tons per acre. Basic slag is also applied in the autumn. Early potatoes are treated with patent artificials. Farmyard manure is as important as ever.

Livestock

In 1956, 35 per cent. of cattle were for dairy purposes and 65 per cent. for beef. Beef cattle are bred, reared and finished within the county; a large number are bred in the north and fattened in the south. Herds are very mixed in Dale though Hereford crosses (often with Friesian) are favoured. They are outside all the year round except for winter nights from January to March.

While beef cattle are kept on every farm, only a few have dairy herds, though most have a cow or two for their own use or for breeding purposes. Again breeds are mixed, but Shorthorns and Friesians are most favoured, with one or two Ayrshires and even an occasional Jersey. They need more attention than the stores and are kept in all day from December to March. In addition to locally grown feedingstuffs they are fed on imported cake. Milking machines are used where the herd is of any size.

The milk is collected from the farms and taken to depots in Haverfordwest, Carmarthen and Whitland and from there mainly to South Wales but also to Birmingham and even to London. Any surplus is made, at Haverfordwest, into powdered milk and, at Whitland, into butter.

About every 18 months inspection for disease and attesting herds for tuberculosis is carried out by the Ministry of Agriculture officials. By 1955 Pembrokeshire was part of an Attested Area and there was virtually 100 per cent. attestation.

Suffolk black-faced sheep, good for earliness and weight, are reared almost entirely for their lamb. The lambing season starts at Christmas and continues to the end of March and the lambs are sold at about 3 months. Pigs and poultry are kept in small numbers on most farms as part of the general mixed farming economy, eggs being sold to the Egg Marketing Board in Haverfordwest.

V. SUMMARY

Behind all the changes in land use and farm practice have been the favourable natural conditions determining which crops will or will not grow. These advantages were formerly less exploited because of the necessity for self-sufficiency. With the opening of markets and improvements of communications, the isolation has been broken down gradually and land utilization has changed.

The main historical influence is perhaps that exerted by the Normans. Political factors have played their part mainly by the requisition of land for military purposes and by the application of subsidies and the setting up of marketing boards. At the present day, the mixed farming economy at Dale is more influenced by Government policy than previously but, with the parish becoming less and less remote and markets more accessible, self-sufficiency is no longer necessary and better use of the natural conditions is being made than ever before. The main handicap to improvement is in the small size of farms and general lack of capital.

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REFERENCES

- ASHBY, A. W., and EVANS, I. L. (1944). *The Agriculture of Wales and Monmouthshire*. Cardiff.
- DAVIES, M. F. (1939). *The Report of the Land Utilization Survey of Britain*. XXXII. Pembrokeshire. London.
- GROOM, G. E. (1956). The Development of the Dale Valley. *Rep. Field Studies Council, 1955-56*, 34-42.
- HASSALL, C. (1794). *A General View of the Agriculture of Pembroke*. London.
- HOWELLS, B. E. (1955). Pembrokeshire Farming circa 1580-1620. *Nat. Lib. Wales J.*, 9 (2), 239-250.
- HOWELLS, B. E. (1956a). Pembrokeshire Farming circa 1580-1620. *Nat. Lib. Wales J.*, 9 (3), 313-333.
- HOWELLS, B. E. (1956b). Pembrokeshire Farming circa 1580-1620. *Nat. Lib. Wales J.*, 9 (4), 413-439.
- OLIVER, J. (1959). The Climate of Dale Peninsula. *Field Studies*, 1 (1).
- OWEN, H. (ed. 1892). George Owen. The Description of Pembrokeshire. 1603. *Cymmrodorion Record Series*, 1.
- PHILLIPS, J. W., and WARREN, F. J. (1914). *The History of Haverfordwest with that of some Pembrokeshire Parishes*. Haverfordwest.
- STRAHAN, A., CANTRILL, T. C., DIXON, E. E. L., THOMAS, H. H., and JONES, O. T. (1914). The Geology of the South Wales Coalfield. XI. The Country around Haverfordwest. *Mem. Geol. Survey G.B.*, 228.