WEST CORK
RESOURCE SURVEY

AN FORAS TALUNTAIS

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FOBEWCBD

In 1960, the West Cork Development Association in conjunction with other local rural organisations in West Cork, concerned about the rate of depopulation and general low level of agricultural development in that area, requested the assistance of An Foras Taluntais. On considering the matter it was felt that the way in which we, as a research organisation, could best contribute would be through a comprehensive survey of the agricultural resources of the area. While there was a certain background of information on such problems as emigration and farm resources and income, this knowledge was of a very general nature, the position in this respect being similar to that for many other such areas of the country. There was no precise information on such matters as the nature and distribution of the different types of land, on present levels of soil fertility and productivity, on grassland output and animal production, on farm incomes, on educational levels or on the social background in the rural community.

The carrying out of a sufficiently comprehensive resource survey presented a formidable task. There was little knowledge on the methodology of such comprehensive surveys either here or elsewhere. Previous surveys had been confined to particular, single aspects such as soils, land use and farm costings. At the time our organisation was only a relatively short while in existence, many of our staff having been freshly recruited, while on the other hand it was realised that the type of survey contemplated would require the collective efforts of people in a wide variety of disciplines covering the physical, economic and human aspects.

Against this background the Council of An Foras Taluntais decided on the carrying out of an agricultural resources survey in the area. It was appreciated that in many respects this survey would be of an exploratory nature and that while providing information on the resources as such, it would in addition aid in establishing the survey methodology required for future surveys of this nature, which surveys are a prerequisite for the optimum use of land resources.

While we appreciate that the knowledge provided in the Report now presented is in a number of respects incomplete, the primary objectives of the survey in providing more detailed and precise knowledge on the resources - both land and people - in the area have, however, largely been achieved. It must be added that it was never the intention to make concrete proposals for the future development of the area on the understanding that the responsibility for doing this rests elsewhere. It is hoped that the information now presented will be of value as a basis for guiding future developments in the area.

Finally, it is a pleasure to be associated with the highly merited acknowledgement given below. In addition I would like to commend the efforts of the Working Party who embarked on and completed this task with so much energy and enthusiasm.

T. Walsh
Director.

April, 1963.

ACKNOWLEDGEMENTS

The Working Party acknowledges the wholehearted co-operation and assistance of: The West Cork Development Association who were instrumental in requesting the Survey, and in particular Rev. Pr. D. Linehan, Mr. II. Boland and Mr. D. Allen; the Agricultural and Horticultural Advisory Officers in the area; the Managers and Committees of the Drinagh Co-operativ-Creamery, the West Cork Creameries (Dairy Disposals, Ltd.), the Lissavaird Co-operative Creamery, and the Managers of the various branches of these Creameries; special thanks are due to Mr. W. Quirke (Drinagh), Mr. P.J. Kerrisk (Aghadown) and Mr. J. Kiely (Lissavaird). Thanks are also due to the local Veterinary Surgeons, and the managements of the local

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Special thanks are due to the local people (both rural and urban), particularly those who so kindly co-operated in the various surveys carried out; to the farmers who provided the necessary land for field experiments, and who provided the crop yield plots; to those who facilitated the general aoil survey of the area, and the surveys cf selected farms, Without the wholehearted co-operation of these people the Survey would not have been possible.

Grateful acknowledgement is also due to the Department of Agriculture (particularly Mr, J. Beatty, Chief Inspector, and the staffs of the Land Project,, the Congested Districts Office, and the Farm Buildings, and Feedingstuffs Section); to the Department of Lands (both Forestry and Fisheries Sections), to the Director of the Central Statistics Office for making much data available to" members of the .working Party; to the Geological Survey (particularly Mr. F.H. Synge); to the Ordnance Survey for permission to U3e base maps of the aroa, and for assistance in the reproduction of maps; to the Director of the Jteteorological Service for data on the climate of the Survey area; and to Professors C, Boyle and P. Quinlan, University College, Cork, for assistance rendered.

The working Party appreciates the continued guidance, stimulation and help of the Director,. Dr. T, tfalsh,and the excellent collaboration of fellow research workers of An Foras Taluntais, including the editorial work of Dr. D. Murphy, arxl would also like to express its gratitude to members of the Cartographic Section, Johnstown Castle, and to various members of the staffs of the Soils laboratories, Johnstown Castle, for analytical data supplied«.

Miss Eileen Ward and Miss Carmel Barr of the Secretarial staff merit a special word of thanks for the part they played in the preparation of this Report,

This Report has been prepared in four sections covering broadly different aspects of the Surrey findings:

Section A - Physical Resources of the Survey Area

Section B - Some Aspects of the Present Agricultural Production Pattern in the Survey Area

Section C - Economic, Demographic and Sociological Aspects of the Survey Area

Section D - Suooary and Conclusions

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SECTION D

Chairman of the working Party **P. Ryan B.Agr.Sc.,M.S.**

Editor of the Report **D. Murphy, M.Sc.,Ph.D.**

SECTION A

PHYSICAL RESOURCES

OF THE

SURVEY AREA

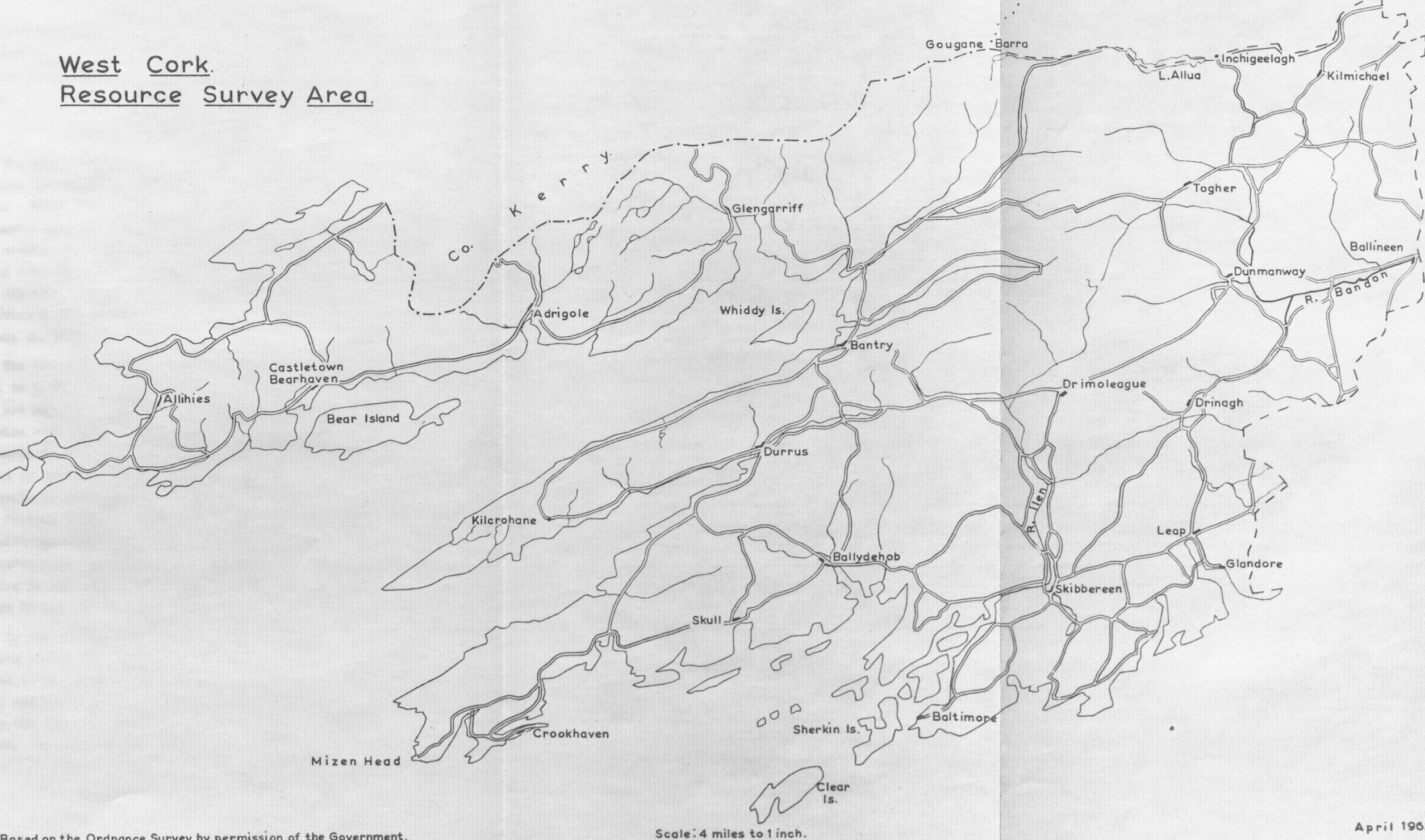
these factors, to compile the necessaiy factual information on which to base decisions, and to formulate remedial measures. Where such factual data were inadequate or non-existent it was necessary to carry out the surveys necessary to provide these basic facts. With these points in mind a number of research investigations have been in hand in the course of the survey. These research projects were aimed at getting the answers to local problems in their local environment, by testing on the spot the significance of research findings obtained elsewhere. During the survey the need for further research, mostly of a long term nature, into certain aspects was brought to light.

While this resource survey was designed to find the answers to some of the problems confronting development in West Cork the significance of the survey extends far beyond the limits of that area. Findings accruing from such an intense, complete and coordinated scientific investigation as this promise to have far reaching and effective application to extensive areas of this country still below their potential development. The problem of the small farm is still one of the most vital to be tackled in national development. Pull and rightful acknowledgement is due to all at both a local and State level who gave their help so willingly to the Working Party and most of all to the local farmers for their very necessary and unstinted cooperation.

The Survey area; The Resource Survey has been confined to that area of Cork County roughly west of a line from Glandore through Ballineen almost to lfacroom. The northern boundary stretches from Macroom to Gougane Barra and thence it follows the Cork-Kerry County boundary line enclosing that portion of the Bear Haven peninsula situate in County Cork. The Atlantic coast line forms the western and southern boundaries. The area oomprises the five Rural Districts of Dunnanway, Skibbereen, Schull, Bantry and Castletown, and the major part is included within the reconstructed conjested district of West Cork, the rural district of Dunmanway being the sole exception. The area covers approximately 700 square miles and is shown in outline in the accompanying map (Pig.1).

The soil resources are devoted mainly to agriculture, the general fanning pattern being one of mixed farming but with strong emphasis on

West Cork.
Resource Survey Area.



Based on the Ordnance Survey by permission of the Government.

Scale: 4 miles to 1 inch.

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grassland and dairying. Limited forestry and horticultural enterprises are also to be found. The farm size is small with the vast majority falling within the three size groups which comprise the 15 - 100 acre class.

TOPOGRAPHY AND LAND FCRMS

The physiographical features show considerable variatioiu within the area providing frequent and significant changes in a complex land^-scape. While the southern half of the area may be described as pre-dominantly steeply rolling to hilly, the northern part in particular is very mountainous. The elevation varies enormously throughout the area rising from sea level to 2,000 ft. over a distance of a few miles. The area exhibits several elevated and rugged promontories running in the direction E 25 N and W 25 S. These continue inland for some distance to form the highest topographical features of the mainland.

The Bear Haven peninsula is very rugged, rising sharply from sea level to 2,320 ft. O.D. at its highest point. Vast expanses of bare rock are exposed. Sheeps Head peninsula (highest point 1,136 ft.) is likewise very rugged and extensively exposed. This high ridge continues eastwards to meet the lofty and rugged Shehy mountains which in turn e circle to join the Miskish and Caha mountains. Likewise the Crookhaven peninsula (highest point 1,339 ft.) is rugged, mountainous terrain and this feature continues inland in a modified form as far as Drimoleague, and although broken here by the Hen River valley, it rises again at Carrigfadda to 1,027 ft. O.D. The remainder of the area has many ridges running in the same direction but they are not so extensive and usually do not exceed 700 ft. in height.

In the valleys between these ridges the land form is mainly of rolling topography with some areas more steeply rolling. Throughout the latter areas the continuity of the land form is constantly broken by local patches of rock outcrops giving rise to a very broken landscape. Along the Hen and Bandon rivers which traverse the area sizable tracts of low, flattish, relief occur.

GEOLOGY[1]

The geology of the Survey area is considered under the two headings, solid geology and drift geology. The entire pattern throughout the area is very complex. Not only are the solid formations complicated in terms of age, mateof formation, structure and composition, but the glacial drift and sollfluction deposits forming the parent materials of most of the arable soils in the area are of a very mixed origin and constitution.

Soil Geology: The principal rock formations are Upper Old Red Sandstone, Old Red Sandstone and Carboniferous shales and slates with 3oue grits, principally Coomhola grits. The Upper Old Red Sandstone and Old Red Sandstone formations have been separated on age, but this geological subdivision does not seem to have any significance as^a parent material factor in soil formation.

The Old Red Sandstone consists of hard, fine-grained, massive, greenish-grey or brownish-grey gritstones. Many of these are affected by slaty cleavage and they comprise every form-, therefore, from a compact solid grit to a fissile slate. Interstratified with the slaty grits are clay-slates of various colours from grey to brick red.

The Carboniferous slates are grey or dark bluish-grey of a smooth, earthy texture and glossy lustre. These are often interstratified with thick, fine-grained grits so that the slates are often merely partings between the grits.

In the whole of the Old Red Sandstone group very small and isolated bands of Cornstones occasionally occur, particularly in the north of the area. Calcareous b>ands, sometimes almost of pure limestone occur frequently in the slates near Bantry. However, neither of these two calcareous materials influence soil development and are mainly of academic interest.

Drift Geology; Whereas glacial drift deposits are extensive in the Survey area, over much of the higher ground drift is thin or non-existent.

[1] For further information on the geology of this area see the one-inch geological maps for the area with the accompanying Memoirs of the Geological Survey of Ireland.

This applies particularly to the mountainous regions of the Croofchav«i, Kilcrohane and Bear peninsulas as well as to the mountainous regions in the north of the area. Considerable stretches of bare rock are exposed at frequent intervals. Even in the more heavily drifted areas of the south and south-east, knolls and ridges of outcropping naked rock occur very frequently giving the landscape a very broken appearance. In all those areas the occurence of "roches moutonnes", striae and erratics provide ample evidence of glacial activity.

It has been established that the area was glaciated in the course of the two main glaciations, the Saale and the Weichsel, which affected extensive areas of Ireland. The area was first glaciated by the ice movement now known as the Greater Cork-Kerry G-laciation which was more or less contemporaneous with the Eastern Component of the Saale Glaciation. The second, and most recent ice movement was known as the Lesser Cork-Kerry Glaciation now referred to as the Killumney Mountain Glaciation.(2) This local glaciation is thought to be contemporaneous with the general Weichsel Glaciation. All the area except some of the highest mountain peaks , weresubjected to this glaciation which deposited the drift materials from which the main soils of the area have been derived.

It has been established that the whole area was undoubtedly glaciated from a north, north-west direction. ' Along the high ridge of the Bear Peninsula glacial striae and rock moulding reflect ice action and leave no doubt as to the general direction of the ice movement. Further observations by way of erratics, "roches moutonnes" and drumlins confirm that the ice moved into the arec from the district to the north-north-west, A further indication that the ice came from that direction is the fact that the northern slopes of the hills tend to have less out-cropping rock than the southern slopes.

(2) Parrington, A. 1954: A note on the correlations of the Cork-Kerry Glaciations with those of the rest of Ireland. Irish Geog. £ (1): 47-53

(3) Wright, W.B. 1927: The geology of Killarney and Kenmare. Memoirs of the Geological Survey of Ireland.

Wright has pointed out that the last ice cap had its centre over the Cork-Kerry border, in the neighbourhood of the Denynasagart Mountains, but in the last phases of this glaciation that the main aasa had migrated to a position partly across the Kenmare estuary and partly across the lower hills some five miles west of Kenmare. From this central axis the ice flowed in two directions, west-south-west towards the Atlantio and east-north-east up the valley of the Roughty River* The latter flow was sufficiently powerful to send tongues both north and south into the lateral valleys. The behaviour pattern of the ioe showed a strong differential movement. At first the ice movement was more closely associated with the underlying topography which constrained it to move mostly along the valley bottoms. As the ice built up to sufficient thickness it moved north and south over the bounding ridges.

It has been established *(4,5)* that when the ice moved across the Bear Peninsula and filled the Bantry Bay depression, it next crossed the hills sad moving in a southern direction eventually covering the whole area, leaving a drift mantle of varying thiokness in its wake. The drift material deposited by this ice flow is thin or non-existent over most of the higher topography where large areas of bare rock are frequently exposed. Possibly muoh of those areas were never covered by drift deposits from the ice, but it is more probable that they onoe had drift cover which was later removed by post-glacial erosion.

The geological composition of the drift shows little variation throughout the entire area. It is dondnantly composed of materials derived from shale and shaly sandstone with some sandstone and in-significant proportions of quarts. However, the drift shows a wide variation in its phytloal properties ranging from loose, fluvio-glacial gravels to dense, tenacious drift.

(t>) Parrington, A. 1936". The Glaciation of the Bantry Bay distriot. Soi. Pro. Roy, Dublin So*. XXI; A5-3&1.

(5) Synge, 7.M. ^*96*^. Personal communication.

The drift deposits can be sub-divided into 3 broad categories.

(1) Compact but non-tenac ious drift,

(2) Dense, tenacious drift.

(3) Fluvio-glacial gravels.

(1) Compact but non-tenacious drift; This consists of a medium-textured, grey deposit, which is non-sticiy but firm in situ, though friable when removed. It contains abundant stones, but few boulders and has a finer-textured matrix of fine gravels, sands and silts. The greater part of the lowland drifted areas are covered by this deposit. Great variations in depth ranging from a few inches up to several feet have been observed. The greater depths were found to ooour on the lower portions of the topography and on oonoave slope positions. In some of the lower locations, however, this drift can be thin or non-existent, due probably to post-glacial erosion. Where the relief is favourable well-drained soils have developed on this drift. On the oonoave slopes and in lowlying positions, however, soil drainage is impeded to varying intensities. On the higher topography, usually above 600 feet, where the rainfall is higher, podzols and peats have developed,

(2) Dense tenacious drift; This drift, mostly of a boulder olay naturev is associated with the Drumlin belt in the area. A. large traot of Drum-lins ooour in the Bantry district and to a lesser extent in the valley of the Fouy»l(ile-Water River which runs into Dunmanus Bay. The drumlins are clearly distinguishable from the rock outcrops by their smooth, regular form in contrast to the rough and broken surfaoe of the latter. The drumlins are round, mostly isolated, mounds a 100 to 150 feet high. According to Farrington some of the drumlins were formed by plastering of the glacial boulder olay over rook outcrops, but most of them are boulder olay throughout$_0$ The drumlins which are exposed most spectacul-arly on Whiddy, Chapel and Horse Islands and along the coastline from Bantry to Ballylickey show no evidence of a rook core.

The drumlin mounds are composed of a stiff, blue-grey material which is plastic and sticky when wet. Though non-calcareous, the pH and calcium status of the material is high. The drift, however, has been weathered to a depth of 12 feet or so to leave a pale grey-brown acid

surface material from which the soils are derived. The soils on ' these glacial deposits show a varying drainage pattern but the majority fall in the more freely drained categories.

(3) Fluvio-glacial gravels: Broadly the gravels can be sub-divided into two groups -

(a) Morainic and esker gravels

(b) Outwash gravels

The former occur as rounded hills with easy rolling and rolling topography especially in the valleys of the smaller rivers and streams. These were formed during halts in the retreat of the last ice sheet, and are composed of loose, friable gravels and sands.

During the retreat of the ice along the larger river valleys extensive melt waters deposited large, flat, tracts of gravels and sands. These outwash deposits are found in the broad valleys of the Lee, east of Inchigeela, of the Bandon east of Dunmanway and of the Hen, south of Hen Lodge. In many cases these materials have since been covered by alluvium deposited by the flood waters of these rivers; only those portions at the edge of the valleys which are a few feet higher than the flood waters, remain free of alluvial cover*

CLIMATE

This account is based on the maps and records produced by the Meteorological Office. The data on rainfall for this area is fairly comprehensive while the data on the other climatic factors is very limited. The rainfall map (Pig. "1) is based on data collected from about twenty stations for 1916-'50 while the data on the monthly distribution of rainfall and on the number of rain days is based on data for a similar number of stations for the period 1950-'59 inclusive.

Rainfall: In general the rainfall is very high but even within this relatively small area there is considerable variation. This is mainly due to the rather abrupt changes in topography which apparently exert a considerable influence in determining the rainfall pattern for the area. The average annual rainfall (Pig.l) ranges from 48 to 110 inches. The lower rainfall occurs in the lowland coastal areas while the extremely high rainfall occurs mainly in the area of Caha and Shehy mountains. In the mountainous areas the rainfall varies rapidly from 60 to 110 inches with elevation.

It is relevant to note that the area of lowest rainfall, i.e. the lowland coastal area, has the same annual rainfall as the area of higher rainfall in Co. Wexford and has about 15 inches more rainfall than the area of lowest rainfall in Co. Wexford.

On the basis ofihe average annual rainfall for the period 1950-'59 the area has been divided into three units: (i) areas having more than 70 inches (1750 mm) rainfall per annum, (ii) areas with between 55 and 70 inches (1400-1750 mm) rainfall per annum, (iii) areas with less than 55 inches (1450 mm rainfall per annum. The average monthly rainfall for each of t hose areas is shown in Table 1. The rainfall pattern over the year is similar for the three areas with a period of relatively low rainfall from April to August inclusive and relatively high rainfall from September to March. The highest rainfall occurs in September in two of the areas. The rainfall in any month varies much less from year to year in the coastal area than in the areas of higher rainfall.

Over the whole area the average number of rain days (i.e. days with more than 0.2 mm or /,,,5 inch rain) varies from 170 along the coast to 235 in the

inland mountainous area. These figures represent the extremes in the area but most places average about 215 rain days in the year. For any station the number of rain days generally varies from year to year by about 50 days.

Relative Humidity: The relative humidity is generally 5 to 10 percent higher than in the midland region of Ireland and ranges from 75 to 85 percent (monthly average). The average monthly relative humidity is shown in Table 11.

Temperature; The area has an average annual temperature of 51 °F, being about 2° F higher than Dublin. The coastal area is consistently higher than the rest of the area by about 1 F. If allowances were made for differences in elevation this difference would probably be of the order of 5 ?. This holds for the period from September to February, but for the remainder of the year temperatures in the inland and coastal areas are closer. The monthly averages for mean air temperature are given in Table 11.

The average number of days with a minimum air temperature of 32°F (frost days) is 25, diminishing to 10 at the coast. By comparison, the mid-region of Ireland, e.g. Tullamore, has on the average 50 frost days in the year. From the limited amount of data available it appears that the length of the frost-free period is at least 200 days (Tullamore - 150) and probably 300 days at the coast. This frost-free period generally extends from about early April to early November in the inland region, and from early March to near the end of December along the coast.

Sunshine: The average means of the daily duration of bright sunshine are presented in Table 11. The duration of bright sunshine on an annual basis is the same as the midland region of Ireland, but it is subject to greater variation During the winter months it is about 2 hours per day and during the summer months about 5 to 6 hours. Summer sunshine in the area is comparable with Wexford, the area of greatest summer sunshine in the country.

Wind; This is probably an important factor in the development of forestry in the area or in the planting of field crops in the coastal region. However, it is felt that no useful purpose could be served in presenting wind figures due to difficulty in interpretating them since local topography considerably influences wind velocities. Local observation on the effect of wind on crops and on trees throughout the area should be the best means of getting meaningful

TAHLK 1

AVERAGE MONTHLY RAINFALL FOR THREE AREAS IN WEST CORK

jln Millimetre! , 25.4 mat - llacfc)_

Auunual rainfall		Jaauary	February	March	April	May	June	July	Auguat	September	October	November	December
High	|750 •	198	160	169	104	117	112	126	148	270	211	174	219
Medium	1400-17)0*	n «	106	134	70	92	84	98	116	162	128	111	111
Lew	below 1400 '	129	10«	116	67	100	76	74	10)	150	138	109	161

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[1] . 70 lacbea • - 55 • 70 tnchea - leaa thaa)) lacbea

TABLE II

MONTHLY AVERAGE OF MEAN AIR TEMPERATURE, RELATIVE HUMIDITY AND SUNSHINE

mm	Jaauary	February	March	April	May	Juae	July	Auguai	September	October	November	December
Meaa all temperaturr	4)	44	4)	47	52	56	59	59	57	11	47	41
Mean relative humidity	85	77	78	75	75	80	SO	80	80	I I	*82*	85
Meaa dally aunahine *	1.9	2.5	3.5	55	5.5	6.0	5.5	J.O	4.5	3.0	2.0	1.5

i

" Monthly averages (°F) reduced to aea level

* Averagea (peteent)

• Average of dally duration of bright •unahlne (hour*)

data on this question. In general however, wind velocities are high in this area, and frequently reach gale force. More extreme wind velocities range from 65-80 miles per hour but readings of 94 (1950 and 105 0957) m.p.h. have been recorded.

Evapotranspiration; While there are no figures available for evapotranspiration in the Survey area, values obtained in other parts of the country indicate that 16-20 inches of water are removed by evapotranspiration *emxy* year. Most of this loss occurs between March and October.

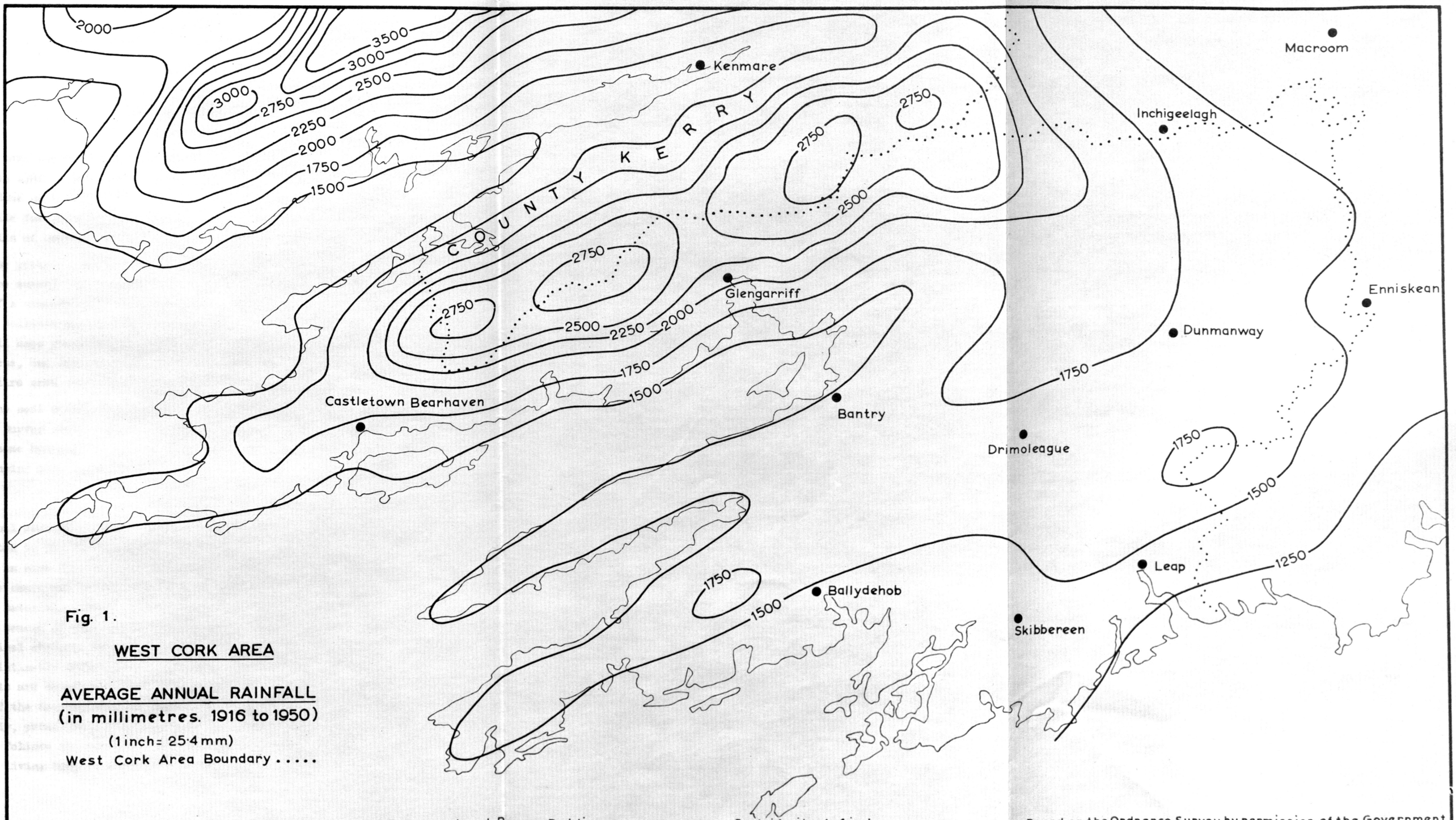

Fig. 1.

WEST CORK AREA

AVERAGE ANNUAL RAINFALL
(in millimetres. 1916 to 1950)

(1 inch = 25·4 mm)

West Cork Area Boundary .....

Prepared by the Meteorological Service, Dept. of Transport and Power Dublin.

Scale: 4 miles to 1 inch.

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Introduction

A soil survey, commenced in the Survey area late in I960, was completed early in 1962. This was a detailed reconnaissance survey, the field mapping being done on a scale of 6 inches to 1 mile and reduced to a scale of ^ inch to 1 mile for publication. Surveys at a more detailed scale, were made of the soils of certain farms selected for special studies.

The present report on the soils of the area is a summary abstraction from the survey findings which are being prepared for publication in the form of a comprehensive bulletin together with the soil map (National Soil Survey Bulletin No. 5. "The Soils of West Cork".) For the present purpose, the soil maps presented are in the form of preliminary black and white abstracts, one for each Rural District, taken from the composite soil map for the entire area which is being prepared for colour printing.

The soil survey has shown that great variability exists in the soil pattern of the Survey area. To fully appreciate the occurrence of such variability in soils some knowledge of the processes of soil formation and the factors influencing soil character is necessary.

Soil Formation

Soil formation is the process by which geological parent materials, subjected to the action of natural forces and living organisms, are transformed in time into soils. The rate at which this process takes place and the character of the resultant soil depend largely on the nature of the parent materials and the environmental conditioning factors involved. In the course of this transformation various chemical, physical and biological changes take place so that the resultant soil, as an end-product, is a distinctly different natural body from the parent material. Primary minerals are decomposed with weathering and secondary minerals formed. Some of the decomposition products are translocated to lower depths or lost entirely, principally by drainage waters. The accumulation of organic matter follows the advent of life in the form of soil flora and fauna. Thus a living body is added to the mineral skeletal mass and a true soil is

formed,, When mature the soil possesses both inherited and acquired characteristics. Therefore, the nature of the parent material is an important factor governing the character of the resulting soil, but of major significnace also are the factors of climate, vegetation, relief and time which determine the nature and intensity of the processes by which the inert parent material is developed into a dynamic soil.

Soil Survey Procedure

A. soil survey entails a thorough examination of 3oils as they occur in their natural state in the field. The surveyor first of all makes a full study of the landscape as a whole, taking stock of such features as local geology, climate, vegetation, variation in elevation, topography, natural drainage and general soil relationships occurring in the area. Land forms and major differences in soils are segregated and tentative mapping units set up at this stage. Such a cursory study of an area is followed by a more detailed examination of the soils. This examination includes a study not only of the surface or plough layer of soils but also of the various sub-surface layers down to and including the parent geological material from which the soil was derived. The potential of any soil is influenced to a considerable degree by the nature of both surface and sub-surface layers and the character of those layers determines the overall character of a soil. Such a vertical 3oil section, including the various layers and the parent material underneath is known as a soil profile and the individual layers are called soil horizons. The basic unit of detailed study of the soil is the soil profile.

A thorough examination and description is made of representative soil profiles in the field where, in their natural state, many characteristics including root development, texture,- structure, consistence and drainage condition can best be studied. By field studies and observations, backed by laboratory analyses on selected soil samples, the survey in brief determines and records the more stable, slow-to-change characteristics of soils so significant in all aspects of soil-plant relationships. In this manner differences and similarities amongst soils are established.

The next step is to map the extent and distribution of the various soils occurring, the ultimate soil map showing the pattern of soils in any one area* Based on the soil differences mapped, the ultimate aim is to evaluate the best land use practices to adopt for the various soils and the behaviour of the soils under different cultural treatments.

Mapping Units used in the Survey area

The basic mapping unit in the soil survey of the area is the soil series. A series is a grouping of soils with similar profile characteristics which are derived from the same parent material. Therefore, it could be accepted that the soils within a series have sufficient characteristics in common to be regarded as similar in terms of their suitability for specific purposes and of their behaviour under various management systems.

In certain instances where the pattern of local distribution of different soil series may be so complicated as to defy accurate delineation into separate series, at the scale of mapping employed, the area is mapped a3 a soil complex. In the Survey area due to the very complicated pattern of soil distribution six such complexes were mapped. In two cases variants of soil series have been mapped; the variant in each case differing in that sand has been incorporated in the surface horizons either by wind or by man* Within a soil series differences in features other than profile character and parent material are mapped as phases of the series. Two such phases have been mapped in the Survey area namely, a broken phase, where the soil cover is discontinuous, and a rocky phase, where the degree of rock outcrop is much greater.

Major Soil Groups in the Area

In studying and mapping the distribution of soils in any area it is found that the soils can be arranged on a broad scale into major or Great Soil Groups, each of which consists of a collection of closely related soil series. Each Great Soil Group then is comprised of soils having a number of important profile characteristics in common. A certain latitude in profile variation is allowable at this level of classification but the degree of similarity nevertheless, is of quite a high order. A single

great soil group may not be confined to a particular geological parent material as the basic criterion for differentiation at this stage is the character of the soil profile.

Within the Survey area the following major soil groups have been distinguished;

Sometimes referred to as Begosols these comprise soils which are immature and show no distinct profile development. They occur in low-lying, flat areas along river courses and at river estuaries. Depending on the source of the water-laid deposits such soils may vary in fertility and also in physical constitution and drainage conditions.

Brown Earths

These are fairly mature soils with more or less uniform profile, which shows little distinct differentiation into horizons. It follows, therefore, that these soils have not been too extensively leached or degraded and there are no obvious signs in the profile of removal and deposition of materials such as iron, humus or clay as occurs under an intense leaching process. However, in many cases, a certain degree of leaching has taken place resulting in the translocation of certain constituents notably calcium and magnesium. In the Survey area the Brown Earths occur on lime deficient parent materials, and are therefore acid in character in contrast to those occurring on more lime rich materials elsewhere in the country.

Brown Podzolics

These soils are more intensely leached than the Brown Earths and as a result they have been more depleted of bases and other constituents in the upper horizons. A- characterti3tic feature of these soils is the presence of a sub-surface horizon of strong red-brown or yellowish-brown colour due to enrichment principally by iron and humus leached from the upper horizons. These soils are more degraded generally and of a more acid nature than the Brown Earths.

Podsols

These soils are still more intensely leached than any of the foregoing, and as such they may be considered as degraded soils. They are developed on parent materials of very low base reserves or under conditions which tend

to deplete the base reserves to a low level. The shale and sandstone hills in the area provide a situation in which both of these factors are operative in soil development. The acid nature of the geological parent materials and high rainfall in this area combine to allow a considerable leaching of soil constituents, foremost amongst which are bases, iron, aluminium in* humus. In cases of further deterioration the surface becomes very acid, conditions for decomposition by micro-organisms become unfavourable, and a peat-like layer accumulates on the surface, on which a characteristic heath vegetation is found*

Gleys

Gleys are those soils in which the effects of drainage impede nee dominate and which have developed under conditions of permanent or intermittent water-logging. The impeded condition in these soils may be due to a high water-table level or to a "perched" water-table due to the relatively impervious nature of the soils and their parent materials and in many cases to a combination of those factors with excess run off from higher slopes. For this reason gley soils can occur both in depressions and on elevated sites on the landscape*

The mineral horizons of G-leys are grey or bluish-grey in colour with distinct ochreous mottling much in evidence. Relative to the foregoing soils depletion of bases and other constituents in general is not so pronounced in these soils. However, rooting area is limited, aeration is poor, rate of decomposition of organic matter is slow and many other unfavourable features prevail. In more extremely gleyed soils, organic matter in a poorly decomposed state accumulates is the surface.

Skeletal Soils

These consist of thin soils, usually of a peaty nature overlying in most cases solid rock. Usually such soil areas have bare rock outcropping at the surface at frequent intervals.

Peats

Peats are soils of a highly organic nature and are usually separated on the basis of characteristics related to mode of formation.

Soil Series ia the Surrey Area

The various soil series and complexes sapped la the area and their parent aaterials are grouped ia Table 1 ia the order of the Great Soil Groups dlionised. Bach series, according to accepted practice, is naaed after the location ia which the soils of that series are best represented or occur with greatest frequency.

Belonging to this group are three different series - Hen, Bench aad aealagh*

lien Series: These are deep, well-drained, friable soils with a very distinctive dark reddish-brown colour and with a uniform loan to silt loan texture throughout the profile. One of the most significant features of this soil is the unusually high percentage of total manganese present. The dark reddish-brown surface horizon contains about 2 percent total manganese sad rises to 4 percent in the darker sub-surface horizon.

notwithstanding the excellent physical properties of the soil, crop production ia the past has been disappointing due to a combination of extremely low nutrient status and toxic levels of manganese. With adequate liming aad fertiliser use, particularly phosphorus and potassium, good yields of cereal and root crops can be obtained* Grassland responds very well to application of the major nutrients but particularly to line aad phosphorus. Due to their excellent physical conditions and free drainage, poaching by livestock is not a problem in wetter periods on these soils aad with the prevailing mild climate, a long grazing season is possible.

naach Series; These soils occur on flattish topography and consist of dark reddish-brown alluvial material about 10 - 15 inches deep overlying outsash gravels, which are cemented in places by manganese to form bard indurated layers* Otherwise physical aad chemical properties are similar to those of the Hen Series.

Like the Hen Series the productivity of these soils in the past has been seriously Halted by the low nutrient status and the toxic levels of nenganese pans renders the soil difficult to cultivate and liable to suffer from

TABLE 1

Classification of 3oils in West Cork

Greet Soil Group	Series	Complex	Parent Material
Alluvial Soils	Hen llanch }4ealagh		Elver alluvial
Brown Earths	Schull Sctiull variant		Compact but non-tenacious drift
Brown Podxolios	Drimoleague		I'orainic and esker gravels
	Madore		Outwash gravels
	Ross Carbery Ross Carbery	variant	Compact but non-tenacious drift
Drown Earths - Brown Podiiclics		Bantry Complex A	Dense tenacious drift
Podxols	Killiiiga Reanasoreena	"Hill and mountain" Complex	Compact but non-tonacious drift
Gleys	Bunalunn Glan Driminidy Glasheenahlelan		Compact but non-tonacious drift
Gleys		Bantry Complex B	Dense tenaoious drift
Skeletal soils		"Hill and Mountain" Complex	Kostly bed-rock
Peats •	Raheen	"Hill and Mountain" Complex	

drought in drier seasons.

Mealagh Series: Soils of this series are rather similar in physical and chemical properties to the lien Series. The texture however is lighter, being a loam to sandy loam and the colour, which is not so dark, is associated with a much lower manganese content. The total manganese level (0.32$), however, is about three times the level normal for the drift derived soils in the area.

Due to its inherent low fertility and acidic nature, the full potential of this soil cannot be attained without frequent applications of lime and fertilisers. • With the application of nitrogen and phosphorus and to & lesser extent potassium, crop production can attain a high level. With the good physical properties and free drainage, poaching is not a problem and therefore, a long grazing season is possible.

Brown Earth3

This great group is represented in the area by the Schull Series.

Schull Series; These soils aae derived from a drift material of mixed shale, shaly sandstone, and" sandstone.. Base depletion has accentuated the acidic nature of the parent material giving rise to an acid soil. The relief on which the soils are found is very variable ranging from flattish to rolling topography, but the majority of the slopes are between 5 and 10 • frequently the landscape is broken by small portions of outcropping rock. These medium textured soils are well-drained with a moderately deep to deep profile. With their good crumb structure and friable consistence, cultivation presents no difficulty. They are suitable for a wide range of arable crops but without regular applications of lime and major nutrients good yields or productive permanent pasture cannot be obtained. With adequate manuring, well-managed short term leys give very early grass production and a long grazing season under the mild climatic conditions prevailing.

Schull-Rocky Phase: Post-Glacial activity has eroded most of the drift cover in this soil area thus exposing the bedrock which i3 now partially covered by a thin black organic skeletal soil. Between the frequent rock outcrops which occupy at least 75 percent of the phase in most cases, the drift cover is reasonably deep, and soils of the Schull Series occur, which especially when

cultivated, form a patch-work effect with the outcropping rocky knolls. The use range of the rocky phase is limited to rough grazing due to the amount of rock outcrop, low fertility and small proportion of Schull Series occurring.

Schull Variantr Originally this soil was similar to the Schull series. Wind-blown sea sand, together with applied sand, has given the soil a lighter surface texture and raised the pH and calcium levels to such an extent that the surface horizon is generally calcareous. The use range of this soil is very similar to the Schull series. Areas of southern aspect within the variant have proven ideal for early potato production.

Brown Podzolics

This Great Soil Group is represented in the Survey area by three .series.

Drimoleague Series: These soils are derived from fluvio-glacial gravels, composed of a mixture of shale, shaly sandstone and sandstone. They are found on rolling topography with a slope range from 2 to 10 with the dominant slopes between 4 and 8 • The soils are deep, friable and well-drained with a 3andy loam texture and a good crumb structure, A higher degree of leaching and base depletion than in the Schull series is reflected in the profile which possesses a characteristic yellowish-red sub-surface horizon as a result of enrichment principally by iron and humus which has been leached down the profile and accumulated in this horizon.

These soils are suitable for a wide range of arable crops* With their excellent physical properties, cultivation presents no difficulty in most seasons. . However, .due to their low fertility and high lime requirements, good yields cannot be expected without frequent applications of lime and fertilisers. Significant responses to nitrogen, phosphorus and potassium have been obtained. Poaching is not a serious problem and therefore a~J.ong grazing season is possible. Short term leys are highly productive when well managed and adequately manured and these soils are noted for early grass production. Permanent pasture is difficuli to maintain without good management practices and regular applications of lime and fertilisers.

Madore Series: These soils are derived from fluvio-glacial outwash -ravels on flattish topography. They are very similar to the Drimoleague

series but hare a somewhat lighter texture and a greater proportion of small stones in the soil profile. They are therefore more liable to suffer from drought in dry periods.

Ross Carbery Series; The soils of this series are derived from compact, non-tenacious glacial drift which is composed of a mixture of shale, shaly sandstone and sandstone. They are found on gently rolling to rolling topography with a slope variability ranging from y to 22 . The majority of the slopes however range from 5 to 12 , and slopes greater than 20 are very infrequent.

Except for their slightly heavier texture, these soils are similar to the Drimoleague series in profile characteristics and soil properties. They have, therefore, much the same use range.

Ross Carbery - Broken Phase: This mapping unit consists of soils which are identical to the Ross Carbery series but which contain up to 25 percent outcropping rock, giving the landscape a broken appearance. Generally the phase occurs on rolling topography with some portions in the steeply rolling category.

while the general suitability of the soils is similar to other series in this Great Soil Group, ordinary farming practices such as cultivation operations are more difficult to perform due to the outcropping rock and the steeper slopes.

Ross Carbery - Rocky Phase: This phase is analogous to the rocky phase of the Schull Series. It consists, for the greater part, of outcropping bedrock (at least 75 percent of the phase in most cases) which has been exposed by post-glacial erosion and which now carries a partial cover of thin, black, organic skeletal soils. where the drift is reasonably deep between the rock outcrops, soils similar to Ross Carbery series have developed. Especially when cultivated, these form a patch-work affect with the rocky knolls.

Rosa Carbery Variant: TH» variant is analogous to the Schull variant. Large quantities of sea sand have been added giving the surface horison a lighter texture and raising the pH and calcium levels significantly. Use range is similar to the Rosscarbery series. With the mild climatic conditions prevailing on the 1#1*"ri* where this soil is found, it is most suitable for early crops,such as bulb growing.

Brown Earths - Brown Podzolics

Bantry Complex A: Because the pattern of local distribution of the different soils is so complicated that accurate delineation into separate soil series, at the scale of mapping employed, is impossible, the soils of this area have been mapped as a complex. The components of the complex are Brown Earths, some well-drained, some moderately well-drained and Brown Podzolic soils. The soils are derived from dense tenacious, blue-grey drift material deposited characteristically as drumlin shaped hills. Topography is rolling with a slope range from b to 20 ; the majority of the slopes vary between 6 and 15 . The Brown Earth component of the complex is generally similar to the Schull Series in profile characteristics and soil properties but has a heavier texture. Likewise, the Brown Podzolic member of the complex is heavier in texture but otherwise similar to the Ross Carbery Series.

The suitability of these soils for a wide range of uses is generally similar to the Ross Carbery and Schull Series but due to the heavier texture and steeper slopes cultivation is more difficult. Normally poaching is not a serious problem. Provided adequate lime is used, good responses to applications of nitrogen, phosphorus and potassium are obtained.

Podzols

This great group is represented in the area by the Podzol component of the "Hill and Mountain" Complex and by the Reanascreena and Killinga Series.

"Hill and Mountain* Complex - Podzol component: This soil is found principally on the more elevated regions, where the nature of the parent material and the environmental conditions, such as higher rainfall and lower temperature associated with higher elevations, are conducive to their formation. They occur on elevations ranging from 500 feet to 2,000 feet.

These soils have been subjected to intense leaching, resulting in a profile showing well-developed, distinctive horizons characteristic of

podzola. The surface horizons are strongly leached of constituents such as iron, ftiimrin-inm and humus. These constituents are concentrated lower down the profile in a distinct, yellowish-red horizon which has a continuous, thin, dark-red, indurated ironpan as its upper boundary. This pan hinders root penetration and is also quite impervious to water movement. These soils differ from the Brown Podzolics also, in having a more distinctly leached sub-surface horizon which has a characteristic bleached appearance. Peat accumulates in the surface zone due to the slow rate of decomposition of plant remains under the urfavourable conditions prevailing. The natural vegetation on these podzols consists of Heather, Purple Moor-grass (Molinia caerulea) and poorer grasses.

These soils have very serious fertility limitations and from this point of view, may be considered the poorest soils in the area. Their use range is limited to rough grazing on an extensive rather than intensive scale. Forestry may also be a possibility on these soils.

Tr-niinfia series: The soils of this series which occur generally between the 500 and 900 foot contours were formerly similar to the podzols of the "Hill and Mountain" complex described above. The scarcity of better quality soils forced the farmers to reclaim and cultivate this marginal land. Ploughing and cultivation have mixed the peaty surface layer and portion of the underlying bleached layer and in some places have broken the ironpan. As a result of this cultivation and the introduction of sown species, the natural vegetation has been replaced. Additions of sea sand, lime, farmyard manure and fertilisers have counteracted the intense base depletion and raised the fertility levels.

Regular liming and manuring, with particular emphasis on phosphorus, are required to maintain reasonable levels of production. Manganese deficiency in oats and barley crops has been recorded on these soils. Because of impeded surface drainage, poaching can be a serious problem. Unless pasture is well managed, limed and manured, the sown grasses are quickly replaced by poorer indigenous species. Cobalt* levels are deficient.

Reanascreena series: Similarly this series is reclaired narginal land. **However,** it **has** been reclaimed and cultivated for a much longer period. **As a result, the** profile characteristics has been so greatly altered that

See paragraph on Cobalt later in this section

only remnants of the original ironpan and of the bleached horizon survived modification by cultivation and earthworm activity. The surface, instead of being a black, peaty layer, is now a very dark-brown mineral horizon. As a result of the destruction of the ironpan, drainage has been improved immensely and rooting depth increased.

While these soils are much more fertile than the Killinga series they are not as productive as the Schull and Ross Carbery series. They have a comparatively wide use range however. For optimum crop production, regular applications of lime and fertilisers are required. Oats and barley are again susceptible to manganese deficiency on these soils and cobalt levels are also deficient. Permanent pasture degenerates quickly without good management including adequate liming and manuring. Short-term leys can be highly productive when given the proper treatment.

Gleys

Four series namely Bunalunn, G-lan, Driminidy and Glassheenahielan, and the Bantry Complex B are representative of this Great Soil Group in the Survey area*

Bunalunn series: Soils of this series are imperfectly drained and occur on gently rolling topography. They are derived from compact but non-tenacious glacial drift and are characterised by a blackish, slightly peaty surface horizon overlying the gleyed parent material in which a discontinuous ironpan may be found. Artificial drainage, where installed, has improved the internal drainage conditions of this soil. Nevertheless, poaching by livestock can be a problem and consequently the grazing season is relatively short. Grass swards are difficult to maintain unless regularly limed and manured. Cobalt levels are again deficient. Similarly arable crops have high lime and fertiliser requirements>on theses soils. Manganese deficiency may also be a problem, especially following liming.

Glan series: These poorly drained soils are derived from compact but non-tenacious glacial drift on flattish to rolling topography. Excessive run-off from higher ground and the compact nature of the parent material causes temporary water-logging, particularly in the winter months, resulting in the development of mottling and of intense grey colours which ar»

indicative of poor internal drainage conditions in the soil profile. **Due** to alternate oxidising and reducing conditions in the soil at various times of the year, indurated manganese pans are found in the subsurface horizons in places.

As a result of the impeded drainage conditions, poaching can be a serious problem and therefore the grazing season is short. Even **with** the better management practices in the area, Juncus (rush) infestation is difficult to control. Although the soils are generally unsuitable for cultivation, due to high moisture content, poor structure and presence of manganese pan in places, they are regularly cultivated mostly to control Juncus and overcome pasture deterioration. On account of the acid nature and low fertility of the soil, regular applications of lime and fertilisers particularly phosphorus, are necessary to maintain reasonable output.

Driminidy series: These soils are found on gently rolling topography and consist of a blackish, slightly peaty, surface horizon overlying a strongly gleyed material. Internal drainage conditions are poor as the compact nature of the parent material and run-off from higher topography causes intermittent waterlogging in the soil during many months of the year.

Due to the acid nature and inherent low fertility, these soils have a high lime and fertiliser requirement. Because of the low levels of management and manuring of the pastures sown species are soon replaced by indigenous grasses and Juncus spp. Even under better management practices in the area, the Juncus is difficult to control. While these soils are generally unsuitable for cultivation and crop yields are reduced nevertheless, they are regularly cultivated as a direct means of controlling Juncus and re-establishing the pasture. Poaching is a serious problem so that the grazing season is considerably curtailed. Cobalt levels are again deficient.

GlassheepflhTglan series: These soils are derived from compact but non-tenacious glacial drift and occur in the lowest topographical positions in concave- depressions and by the smaller rivers and streams. The dominant factor affecting the soil conditions is the high water-table which gives rise to intense gleying and the development of a peaty surface horizon which carries a poor vegetational cover of Juncus spp.. Carex spp. and

poorer grasses.

Impeded drainage, poor structure and poor aeration render the soil very susceptible to poaching. Consequently the grazing season is extremely short. Fertility levels are very low and responses to lime and fertilisers, particularly phosphorus, can be expected. These soils are very unsuitable for cultivation.

Bantry complex 3: This complex has been mapped in the lowlying valleys between the drumlins, where poor internal drainage is the dominant factor affecting soil formation and soil conditions. In the lowest portions of the valleys, where the water-table was consistently high, deep peats developed, most of which have been cut-over and are now artificially drained. At a slightly higher elevation, where the water-table was not consistently high, the soils were waterlogged particularly in the winter months, giving rise to distinct features associated with poor internal drainage conditions. The soil is characterised by intense grey colours indicative of strong gleying.

Poor drainage, heavy texture and poor structure render the soils very susceptible to poaching and as a result the grazing season is short. Good responses to line and fertilisers, particularly phosphorus, can be expected at present low fertility status. These soils are generally unsuitable for cultivation. However, the cut-over peats can produce fairly good yields of crops such as oats, potatoes and root crops, provided adequate lime and fertilisers are applied, and these have proven quite suitable for growing celery.

Skeletal Soils.

The soils of this group occurring in the area have been mapped as a component of the "Hill and Mountain" complex.

"Hill and Mountain" complex - Skeletal Soil: This component of the "Hill and Mountain" complex consists of a partial cover of thin black, organic soil supporting a poor vegetation of Erica cir.erea« furze and poorer ' grasses. This thin soil cover is associated with various proportions of outcropping rock and generally occurs on steeply rolling topography.

Fertility states is very low and cobalt levels are generally very deficient.

Peats

Two main types have been mapped.

Raheen series: This series is found in the lowlying valleys where its development is associated with very poor drainage conditions. Base status and nutrient levels are extremely low. Some of this peat has now been cut-over and artificially drained. With adequate lime and fertiliser application this cutover material can give fairly good yields of crops such as oats, potatoes and root crops and has proved quite suitable for growing celery.

"Hill and Mountain" complex - Climatic Peat: This peat has been mapped as a component of the "Hill and Mountain" complex. Peat development in this case is a result of the acid nature of the geological materials and the colder and wetter climatic conditions associated with more elevated regions. General fertility and cobalt levels are extremely low.

"Hill and Mountain" complexes

On the more elevated areas ranging from 500 to 2,300 feet, complexes of the 3 major soil groups, Podzols, Peats and Skeletal soils, occur with varying proportions of outcropping rock on topography ranging from flattish to very steep slopes. Four complexes, with different proportions of these 3 soils intermixed with variable extent of rock outcrop have been mapped as follows -

"Hill and Mountain" complex A: This is a complex of peats and podzols, without any rock outcrops, which occur generally below the 800 foot contour on flattish to gently rolling topography. This complex is suitable for hill grazing and perhaps forestry. Cobalt levels are extremely deficient.

"Hill and Mountain" complex B: This is a complex predominantly of peats and podzols (with a smaller proportion of skeletal soils) with less than 15 percent outcropping rock and generally occurring on broken rolling topography. This is suitable for hill grazing and perhaps forestry. Cobalt levels are again extremely low.

*Hill and Mountain" complex C: This complex consists of peats, podzols and skeletal soils with more than 15 percent but less than 50 percent rock outcrops. The topography ranges from broken rolling to steeply rolling. The complex is mainly suitable for hill grazing. Cobalt levels are extremely

low.

"Hill and Mountain" complex D: This consists predominantly of skeletal soils with more than 50 percent outcropping rock which occur generally on steep topography. Cobalt levels are extremely deficient*

Soil Suitability

An interpretive classification of the soils into soil suitability classes is shown in Table 11. Soil suitability classification consists essentially of outlining the range of uses which can be practised on a given soil and is based principally on an evaluation of the significance of the more permanent characteristics of the soil. A further step in soil classification consists of assessing the production potential of each soil for the normal range of farm crops. The importance of such classification lies in the fact that it provides the essential link between the physical and economic aspects of the use of soils. Such a classification requires precise quantitative data on the production potential of each soil for the normal range of farm crops. This information is not so far available. However, from a knowledge of the soil properties it is possible to make qualitative assessments as to the possible use range of the different soils.

Major Class A

All the soils in Class 1 are suited to both cultivation and grazing and as shown in Table 11, apart from t heir low fertility status, they have no other serious limitation. Provided they are properly limed, fertilised and managed they are capable of high production. Not only is the potential for grassland production high throughout the summer, but early spring grazing can be obtained especially on new leys (see Grassland Section in this Report). With optimum manurial and management practice's, differences in overall productive .capacity may exist between the soils in this class as a result of the inherent differences between series. Far instance, the lighter-textured Drimoleague series should give better early grass production than the Rosscarbery series. Similarly the heavy-textured Bantry complex A is slightly more difficult to cultivate than the other soils in the Class 1 grouping.

TABU U

SoU Suitability Classification

Major Claaa	CLaas	UM kange	Type of Li; itetlon	Soil Series	Phase, Variant and Coeplax
lMainly suitable for cultivated orops, pasture and forestry		Did* use rang*	No aarioua limitations	Schull Roes, Carbery 3rlaolcague Kadore	Schull Variant [1]-oaa CerberyVarlant Unntry Coaplex A
	1a	flda uaa rang*	High aangaruise	Hen	
	1b	Wide use rang*	Cobalt and Manganese generally deficient	Reenaacreena	
Mainly suitable for pasture, less suitable for cultivation and Mainly of noderate suitability for forestry.		SoiMewUt limited use ran/re	Physical limitations for tillage		Rosa Carbery- Broken Phase
		Somewhat limited ose range	Some physical lini-biti-jns, soinccliat liable to poaching; e*tre«»ly low fertil-ity; cobalt and •onganose deficient	Bunalunn Killinca	
		United use range	Serious hydrologlo Hesitations, liable to poaching; extrtu-ely lo* fertility. Cobalt deficient - Driniiildy	Clan DriiHinldy	
		United use range	Very serious hydrologle llaitatlona, liable to severe poaohint> Extremely low fertility.	Glnoheenahlelaii	Bantry Complex B
Mainly suitable for extensive grasing and tantnly «f nolomtn to poor suitablltty for forestry		Very ll*itod use rung*	Hydrologic linltnt'ions; -rtroinnly low fertility. Cobalt wry daflnlant	Rnheen	•Hill and Kount/xin" Coqplo* A "111 11 and Uountaln" Complex D
.Mainly suitable for eatenaive grasing only. Poor suit-ability for forestry.		Very lixritnd use rang*	IU»:klnc33. Extr-mly l/>« fertility. Cotmlt T«ry deficient		"Hill and Mountain" Complox C "Bill and Kount-aln" Coiiplux L* • iohull - Rooky F1»*oe Rosa Carbery- Itoo^ Phase

• All soils have low fertility as a major limitation .inlesa oMianrijo stated

with regular attention to liming and fertiliser use, particularly phosphorus, grassland production and arable cropping on the soils in Class 1a give good returns. Nevertheless, the very high manganese levels in the soil must be regarded as a definite limitation. With good management and manurial practices the soils in Class 1b are suitable for both arable cropping and grazing. However, even with adequate dressings of phosphorus and other nutrients crop responses generally are not as high as in Class 1 and cobalt and manganese deficiencies occur.

Major Class B

The soils in this major class are not generally suitable for cultivation and present certain limitations in their use as grassland for which they require more specialised management and high levels of lime and fertiliser use, particularly phosphorus, to attain their maximum production.

Class 2 is not generally suited to cultivation due to physical limitations which make cultivation difficult. Manch series also has a very high manganese content« Soils of Classes 3> 4 and 4a are seriously li-ited in their production capacity by various degrees of drainage impedance and extremely low fertility levels. While they are capable of producing a fairly high output of grass during the summer months they are limited in their production of early Spring grass and in the efficiency with which it can be utilised by the animal due to the liability to poaching. Poaching is less a problem on the Bunalunn and Killinga series but is particularly severe on the soils in Class 4a. In addition, manganese and cobalt levels cf the Bunalunn, Killinga and Driminidy series may be deficient.

Major Class C

The soils of this major class have very definite limitations in their use possibilities. Their extremely low fertility and very low cobalt levels together with their low potential are their main limiting factors. They are mainly suitable for extensive grazing(for which they are capable improvement)and perhaps forestry.

Major Class D

The use range of the soils in this major class is limited more or less to extensive grazing. Most serious limitations are the extremely low fertility, very deficient cobalt levels and the degree of rock outcrop.

Cobalt Problem in the Soils of the Area

Cobalt analyses were carried out on samples represertative of each of the soils in the area to obtain information on the cobalt levels present in the soils and to indicate whether this element could be a possible limiting factor in sheep production. Under similar climatic conditions and in soils on similar geological parent materials low cobalt levels have been recorded by Walsh et al. '

The results are summarised in Table 111* The most important feature of these results is that whereas the geological parent materials in general are not deficient in cobalt, intense leaching, due to high rainfall, has resulted in many of the soil3 being now very deficient in this element.

The only satisfactory group of soils are the Alluvial soils and those with poor to very poor drainage where profile leaching is at a minimum. In the Sohull series, in which profile characteristics indicate a minimum of leaching, the soils are slightly deficient to satisfactory. Large additions of sea sand has apparently maintained the levels of cobalt in the Schull and Ross Carbery variants.

The Drimoleague and Madore series show a wide range of cobalt levels. Generally levels are slightly deficient to satisfactory. In these series and in particular the Drimoleague series, where there is evidence of more intense leaching cobalt status is at deficiency level. The Ross Carbery series and Bantry Complex A are generally deficient with a range varying from very deficient to satisfactory levels. In the elevated regions where rainfall is high and consequently where leaching is very intense, the peats, podzols, and reclaimed podzols and skeletal soils have very deficient cobalt levels. The Driminidy and Bunalunn

* ' Walsh, T., Fleming, G.A., Kavanagh, T.J. and Ryan, P. 1955. "The Cobalt status of Irish soils and pasture in relation to pining in sheep and cattle". Journal Department of Agriculture. Vol. 152

soils with the peaty surface horizons are also very deficient in cobalt.

Cobalt is an essential trace element in the nutrition of sheep and cattle[1] and a deficiency in the soil and herbage causes serious unthriftiness or pining and in more extreme cases losses through death. Sheep are more likely to suffer in the Survey area, being confined more to the hill areas where the deficiency is most widespread. To correct this deficiency, cobalt should be added to the soil in the appropriate manner or administered directly to the animals.

TABLE 111: Cobalt status of soils series in the Survey area.

Soils (series)	Cobalt status
Clan, G-lasheenashielan, Hen, Uanch, Mealagh, Bantry Complex B	Generally satisfactory
Schull, Schull variant, Ross Carbery variant	Slightly deficient to satisfactory
Drimoleague, Madore	Slightly deficient to satisfactory, but very deficient where soils are more strongly leached
Ross Carbery, Ross Carbery (broken phase)$_t$ Bantry Complex A	Generally deficient, with a range of very deficient to satisfactory
Ross Carbery (rocky phase), Schull (rocky phase), Reanascreena, Killinga Bunalunn, Driminidy, Raheen "Hill and Mountain" Complex	Very deficient

Distribution of the Main Soils in the Survey area

The distribution of the soils in the area is shown on the Maps (Nos.1 to 5) which accompany this Report. The field mapping of the soils was carried out at a scale of 6 inches =] mile. For this publication, a reduction to a scale of ^ inch = 1 mile was made. By so doing it was not possible in areas of very complex soil pattern to show the boundaries of individual 3oils. In 3uch cases the soil boundaries, though mapped on the field base maps, are not possible to reproduce on the reduced scale due to the

rexy intricate distribution pattern of the soils. A summary legend denoting the soils presented is given for each map.

Extent and Relative Proportion of the Different Soils

The extent and relative proportion of the different soils mapped in the Survey area are shown in Table IV. The soil series are arranged in groups according to the soil suitability major classes and classes of Table 11, The extent of each major class ar.d the percentage proportion of the entire area occupied by each major class (shown in brackets) together with the extent of each soil within the classes and the percentage proportion of the entire area occupied by each soil are given in Table IV. A breakdown according to Rural Districts is shown in Table V.

The figures presented in Table IV show that the most desirable soils (major class A) occupy only about 33 percent of the entire Survey area. Relative to areas of more extensive and more productive soil resources elsewhere in the country this is a very low proportion. Approximately 57 percent of the area comprises soils in major classes C and D that can only be regarded as very poor soils. It is obvious then that the proportion of better quality soils is very limited, but as is shown elsewhere in this report these in most cases, are not being used to their full capacity. Even the extensive poorer soils are capable of vast improvement over their present low output levels. The scarcity of high quality soils in the area emphasises the importance of obtaining maximum production from these, in order to compensate for the extensive occurrence of poorer soils and to improve in as far as possible, also the output from the latter.

The variable quality and extent of the soils in the different Rural Districts can be seen in Table V. The most significant feature reflected in the figures presented is the relatively high proportion of good quality-soils (major class A) in the Skibbereen and Dunmanway Rural Districts compared with the Rural Districts of Bantry, Castletown - Bearhaven and Schull. By comparing Skibbereen District with Castletown - Bearhaven District the extreme in soil quality difference can be seen, where the former has *k9* percent of major class A soils and 36 percent of the poorest

TABLE IV: Extent and relative proportion of different soils in the Survey area

Uajor class	Soil suit-ability class	Soils	Area (St. acres)	Percent of total area
A	1	Schull series	14,031	3.1
		Schull variant	359	0.1
		Ross Carbery series	99,928	21.9
148,808 st.ao.		Rose Carbery variant	268	0.1
(32.6 percent)		Drimoleague series	14,791	3.3
		Madore series	1,351	0.3
		Bantry Complex A	14,079	3.1
		Mealagh series	73	0
	1a	lien	2,847	0.6
	1b	Reanascreena series	1,081	0.2
B	2	Ross Carbery (broken phase)	17,926	3.9
		Manch series	278	0.1
47,570 st.ac.	3	Bunalunn series	753	0.2
(10.5 percent)		Killir.ga series	3,075	0.7
	4	Man series	16,190	3.5
		Driminidy series	4,956	1.1
	4a	Glasheenahielan series	1,984	0.4
		Bantry Complex B	2,408	0.5
		Raheor. series	26,397	5.8
68,033 st.ac.		"Hill and Mountain" Complex A	16,819	3.7
(14.9 percent)		Complex B	24,817	5.4
		"Hill and Mountain" Complex C	99,620	21.9
"190,997 st.ac.		• Complex D	64,081	14.1
(42.0 percent)		Schull (rocky phase)	5,733	1.3
		Ross Carbery (rocky phase)	21,563	4.7
Total:			455,408 st.ac,	

quality soils against 12 percent and approximately 80 percent respectively for Castletown - Bearhaven$_e$

In terms of extent of the better quality soils Dunmanway District approximates most closely the position in Skibbereen District. Each of these Districts contain at least twice the extent of the best quality soils (major class A) that occurs in either the Bantry or Schull Districts which show more or less a similar distribution pattern and about four times that of Castletown - Bearhaven District. Reciprocally Castletown - Bearhaven District has by far the greatest proportion of poorest quality soils (major classes C and D). The proportion of intermediate quality soils (major class B) is relatively low for all districts and shows little variation between districts.

The great variation in soils, their quality and distribution, throughout the Survey area, is clearly reflected in the relative prosperity and economic viability of the different Rural Districts as shall be seen in other sections of this report.

TABLE 7: Extent and relative proportion of different soils in the Rural District of Skibbereen.

Major Class	Soil suitability class	Soils	Area (St.acr^s)	Percent of total area
A	1	Schull series	557	0.5
		Schull variant		
		Ross Carbery series	47,879	42.0
56,217 st.ac.		Ross Carbery variant	268	0.2
(49.3 percent)		Drimoleague series	4,728	4.1
		Madore series	346	0.3
		Bantry Complex A	73	0.1
		Mealagh series		
	1a	lien	1,608	1.4
	1b	Reanascreena	758	0.7
B	2	Ross Carbery (broken phase)	9,256	8.1
		Manch series		
	3	Bunalunn series	288	0.3
		Killinga series	1,828	1.6
16,592 st.ac. (14.5 percent)	4	Glan series	1,924	1.7
		Driminidy series	2,664	2.3
	4a	Glasheenahielan series	632	0.5
		Bantry Complex B		
C	5	Raheen series	12,096	1Q.6
17,420 st.ac.		"Hill and Mountain"Cdmplex A	2,008	1.8
(15.3 percent)		• * • Complex B	3,316	2.9
D	6	"Hill and Mountain"Complex C	10,971	9.6
		• " " Complex D	656	0.6
23,795 st.ac.		Schull (rocky phase)	160	0.2
(20.9 percent)		Ross Carbery (rocky phase)	12,008	10.5
Total:			114,024	

TABLE V: Extent and relative proportion of different soils in the Rural District of 7^00ntd.) Bantry

Major Class	Soil suitability class	Soils	Area (St.acres)	Percent of total area
A 24,740 st.ao. (23.2 percent)	1	Schull series. Schull variant Ross Carbery series	6,186	5.8
		Ross Carbery variant Drimoleague series	3,937	3.7
		Madore series Bantry Complex A	14,006	13.1
		Mealagh series	73	0.1
	1a	lien	387	0.4
	1b	Reanascreena	151	0.1
		Ross Carbery (broken phase)	2,048	1.9
		Kanch series		
	3	Bunalunn series		
7,838 st.ac. (7.3 percent)		Killinga scries		
	4	Clan series	2,724	2.5
		Driminidy series	368	0.3
	4a	Clasheenahielan series	290	0.3
		Bantry Complex B	2,408	2.3
C *12,824 st.ac* (12.0 percent)	5	Raheen series	2,676	2.5
		Hill and Mountain-Complex A	3,543	3.3
		" " " " B	6,605	6.2
D 61,451 st.ac 57.5 per cent	6	"Hill and Mountain"ComplexC	26,114	24.4
		*Schu11 ComplexD (Rocky Phase')	32,988	30.9
		Ross Carbery (rocky phase)	2,349	2.2
Total			106,853	

TABLE V: (oontd.) Extent and relatiTe proportion of different soils in the Rural District of Caatletown-Bearhaven

Major Class	Soil suit-ability olaaa	Soils	Area (St.acres)	Percent of total area
A 9,007 at.ac. (12.5 percent)	1	Schull series Schull variant Ross Carbery series Ross Carbery variant Drimoleague aeries Madore series Bantry Complex A Mealagh series	4,793 3.022 1.192	6.5 4.2
	1a	lien	-	-
	1b	Reanasoreena	-	-
6,258 st.ac. (8.5 percent)		Ross Carbery (broken phase) Manch series Bunalunn series Killinga series Glan series Driminidy series Clasheenahielan series Bantry Complex B	1,562 3,854 842	2.1 5.2 1.2
14,744 st.ac. (20.1 percent)		Raheen series "Hill and Mountain" Complex A " • " Complex B	1,124 9,919 3,701	1.5 13.5 5.1
43,416 st.ao. (59.1 percent)		•Hill and Mountain" Complex C " " Complex D Schull (rocky nhoae) Rosa Carbery (rocky phese)	24,2C4 17,562 1,670	32.9 23.9 2.3
Total:			73,445	

TABLE V: (contd.) Extent and relative proportion of different soils in the Rural District of Dunmarmay

Major olass	Soil suit-ability class	Soils	Area (St.acres)	Percent of total area
A 45,980 st.ac. (44.3 percent)	1	Schull series Schull variant Ross Carbery series Ross Carbery variant Drimoleague series Madore series Bantry Complex A Mealagh series	 39,446 4,586 1,005	 38.0 4.4 1.0
	1a	lien	852	0.8
	1b	Reanascreena	91	0.1
B	2	Ross Carbery (broken phase] Manch series	3,281 278	3.2 0.3
8,333 st.ac. (8.1 percent)	3	Bunalunn series Killinga series	 1,247	 1.2
	4	*dlsin* series Driminidy series	2,099 402	2.0 0.4
	4a	Glassheenahielan series Bantry Complex B	1,026	1.0
C 16,413 st.ac. (15.8 percent)	5	Raheen series "Hill and Mountain" Complex A " " " Complex B	7,503 1,109 7,801	7.2 1.1 7.5
D 33,191 st.ac (31.8 percent)	6	"Hill and Mountain" Complex C " " Complex D Schull (rocky phase) Ross Carbery (rocky phase)	24,972 3,742 4,477	24.0 3.6 4.2
Total:			103,917	

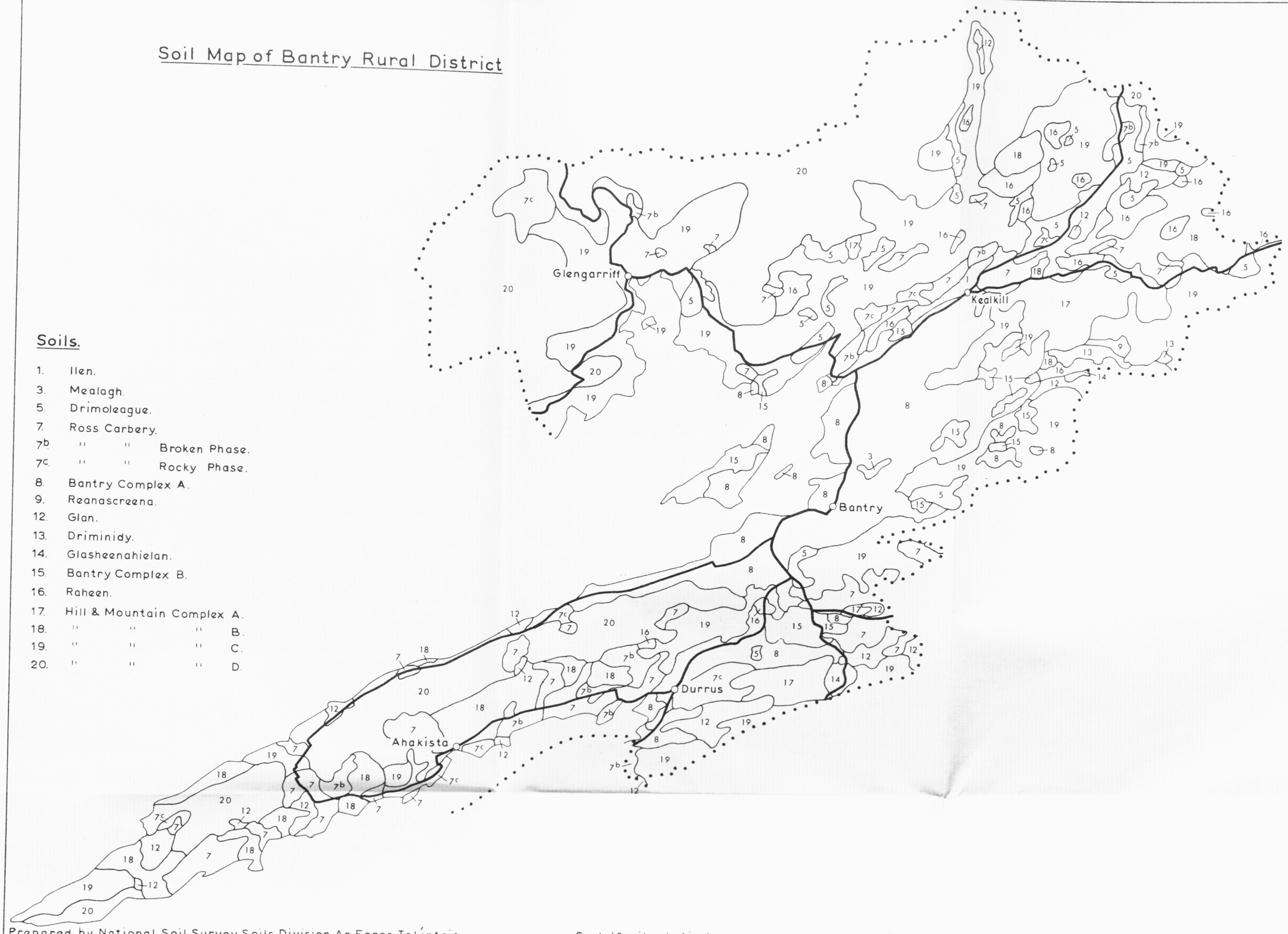
TABLE V; Extent and relative proportion of different soils in the Rtfral District of Schull. (contd.)

Major Class	Soil suitability classi	Soils	Area (St.acres)	Percent of total area
A 12,864 st.ac. (22.5 percent)	1	Schull series Schull varia:.t Ross Carbery aeries Ross Carbery variant Drimoleague series Madore series Bantry Conplex A Mealagh series	8,681 359 3,395 348	15.2 0.6 5.9 *0.6*
	1a	lien	-	-
	1b	Reanascreeria	81	0.2
B 8,549 st.ac. (15.0 percent)	2	Ross Carbery (broken phase) Manch series	1,779	3.1
	3	Suiialunn series Killinga series	465	0.8
	4	Clan series Dri»inidy series	5.589 680	9.8 1.2
	4a	Olaslieenahielan series Bantry Complex B	36	0.1
C 6,632 st.ac. (11.6 percent)	5	Raheen series "Hill and Mountain" Complex A " " " Complex B	2,998 240 3,394	 0.*4 5.9
D 29,124 st.ac. (50.9 peroent)	6	"Hill ard Mountain" Complex C " " " Complex D Schull (rocky phase) Ross Carbery (rocky phase)	13.359 9.133 5,573 1,059	23.3 16.O 9.7 1.9
Total:			57,169	

Soil Map of Bantry Rural District

Soils.

1. Ilen.
3. Mealagh.
5. Drimoleague.
7. Ross Carbery.
7b. " " Broken Phase.
7c. " " Rocky Phase.
8. Bantry Complex A.
9. Reanascreena.
12. Glan.
13. Driminidy.
14. Glasheenahielan.
15. Bantry Complex B.
16. Raheen.
17. Hill & Mountain Complex A.
18. " " " B.
19. " " " C.
20. " " " D.



Prepared by National Soil Survey, Soils Division, An Foras Talúntais.

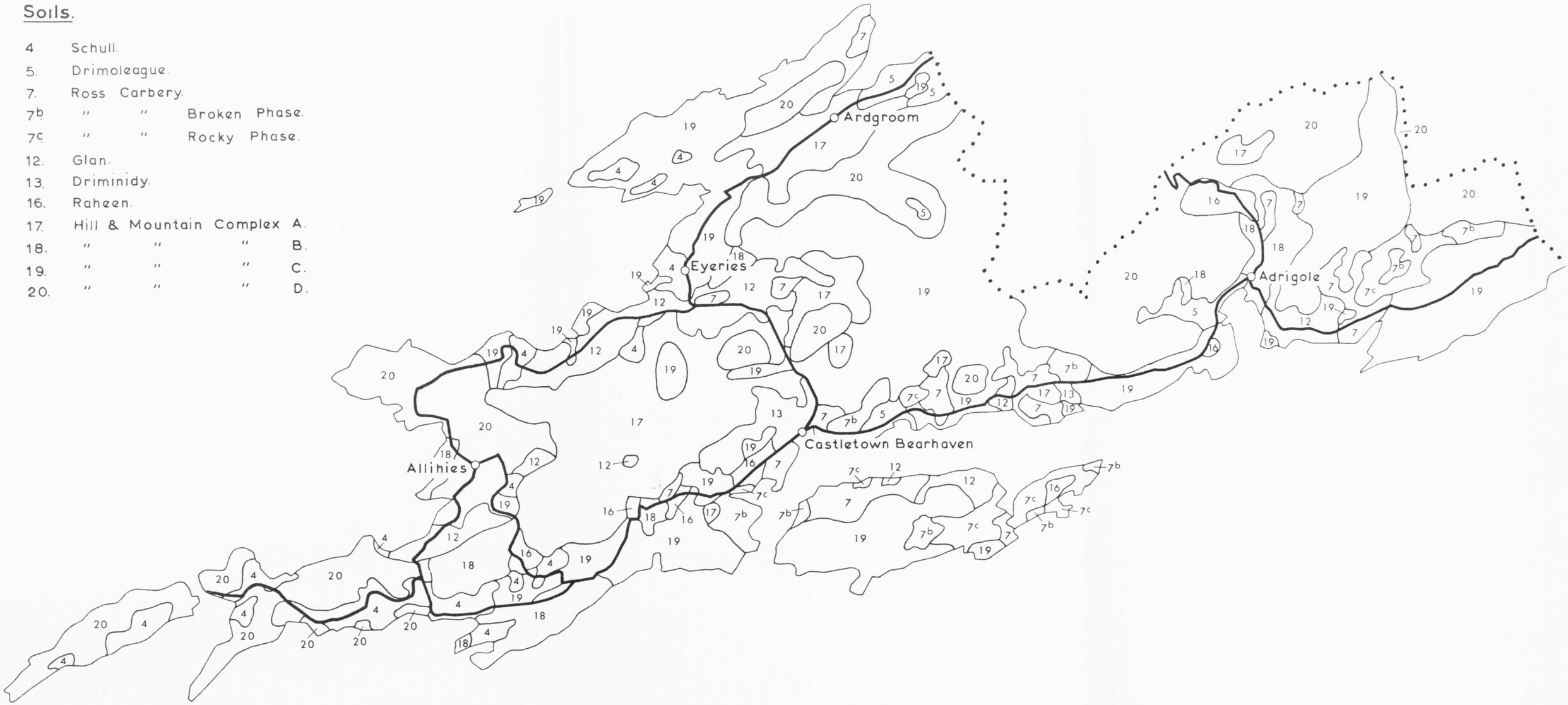
Scale: 2 miles to 1 inch

Based on the Ordnance Survey by permission of the Government.

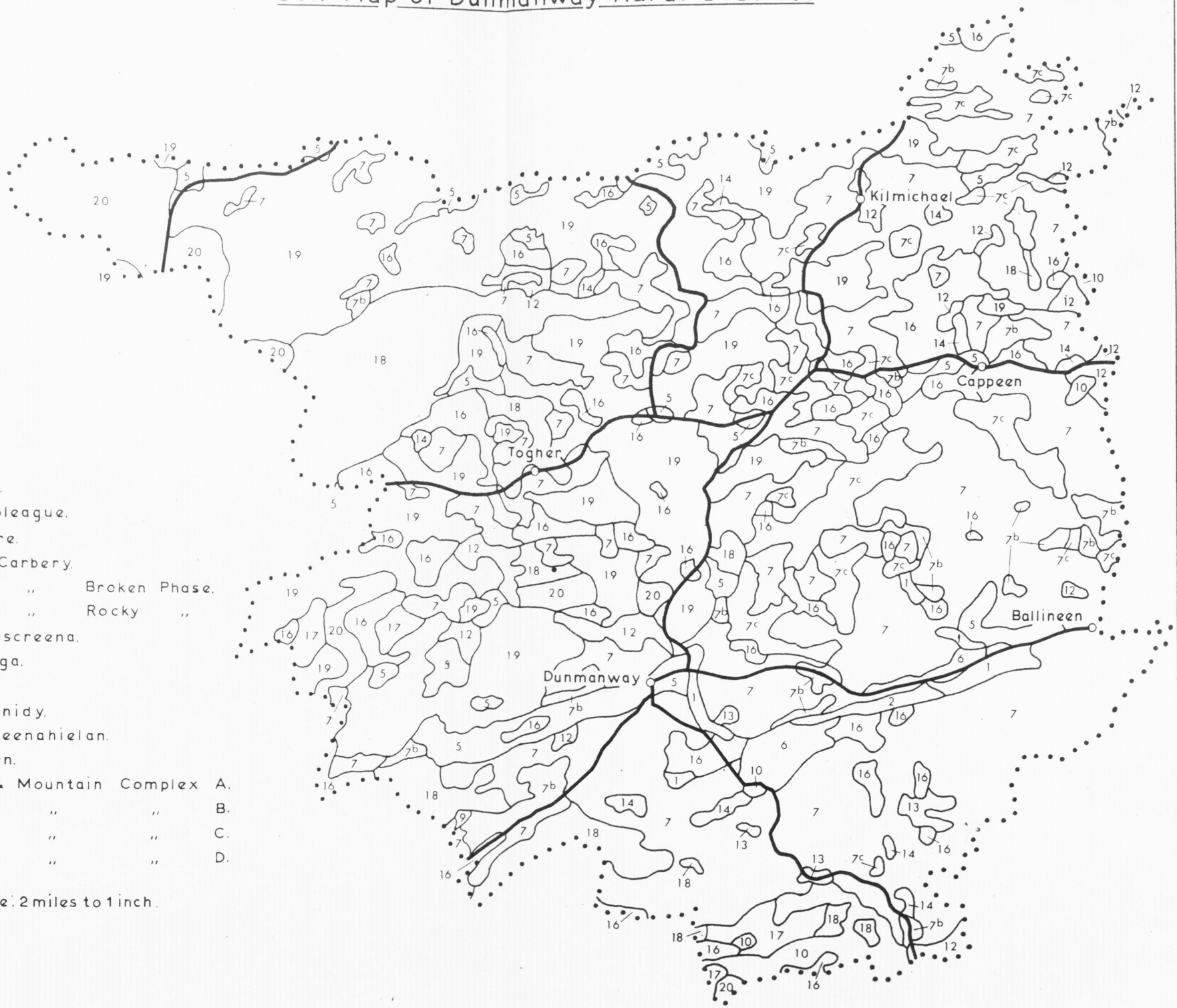
Soil Map of Castletown Rural District

Soils.

4. Schull.
5. Drimoleague.
7. Ross Carbery.
7b " " Broken Phase.
7c " " Rocky Phase.
12. Glan.
13. Driminidy.
16. Raheen.
17. Hill & Mountain Complex A.
18. " " " B.
19. " " " C.
20. " " " D.



Soil Map of Dunmanway Rural District



Soils.

1. Ilen.
2. Manch.
5. Drimoleague.
6. Madore.
7. Ross Carbery.
7a. " " Broken Phase.
7c " " Rocky "
9. Reanascreena.
10. Killinga.
12. Glan.
13. Driminidy.
14. Glasheenahielan.
16. Raheen.
17. Hill & Mountain Complex A.
18. " " " " B.
19. " " " " C.
20. " " " " D.

Scale: 2 miles to 1 inch.

Prepared by National Soil Survey, Soils Division, An Foras Talúntais.

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Soil Map of Schull Rural District

Soils.

- 4 Schull
- 4a " Sandy Variant
- 4b " Rocky Phase
- 5 Drimoleague
- 7 Ross Carbery
- 7b " " Broken Phase
- 7c " " Rocky "
- 9 Reanascreena
- 11 Bunalunn
- 12 Glan
- 13 Driminidy
- 14 Glasheenahielan
- 16 Raheen
- 17 Hill & Mountain Complex A.
- 18 " " " " B.
- 19 " " " " C.
- 20 " " " " D.

Scale: 2 miles to 1 inch.

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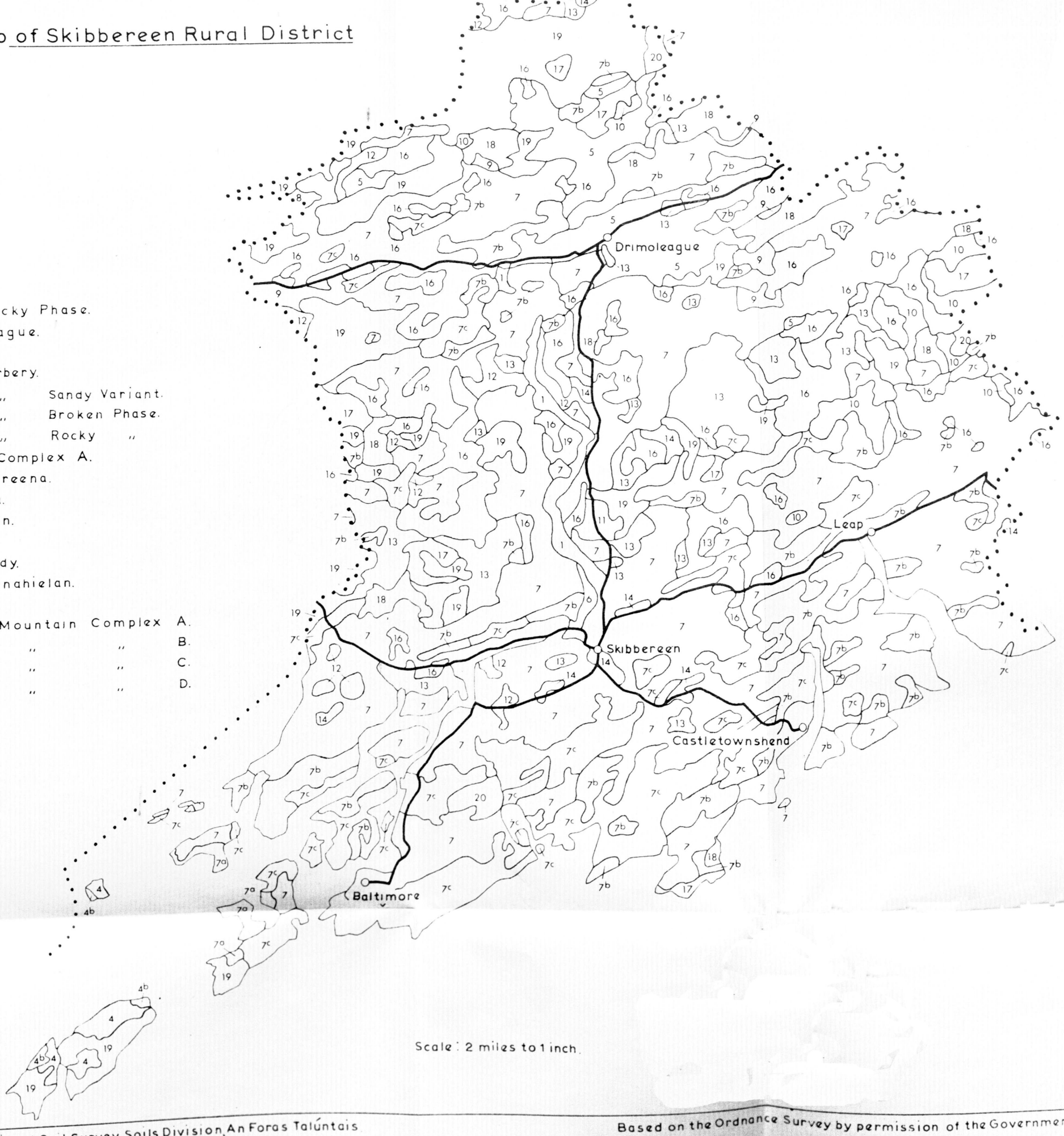
Soil Map of Skibbereen Rural District

Soils.

1. Ilen.
4. Schull
4b " Rocky Phase.
5. Drimoleague.
6. Madore.
7. Ross Carbery.
7a " " Sandy Variant.
7b " " Broken Phase.
7c " " Rocky "
8. Bantry Complex A.
9. Reanascreena.
10. Killinga.
11. Bunalunn.
12. Glan.
13. Driminidy.
14. Glasheenahielan.
16. Raheen.
17. Hill & Mountain Complex A.
18. " " " " B.
19. " " " " C.
20. " " " " D.



Scale: 2 miles to 1 inch.

Prepared by National Soil Survey, Soils Division, An Foras Talúntais

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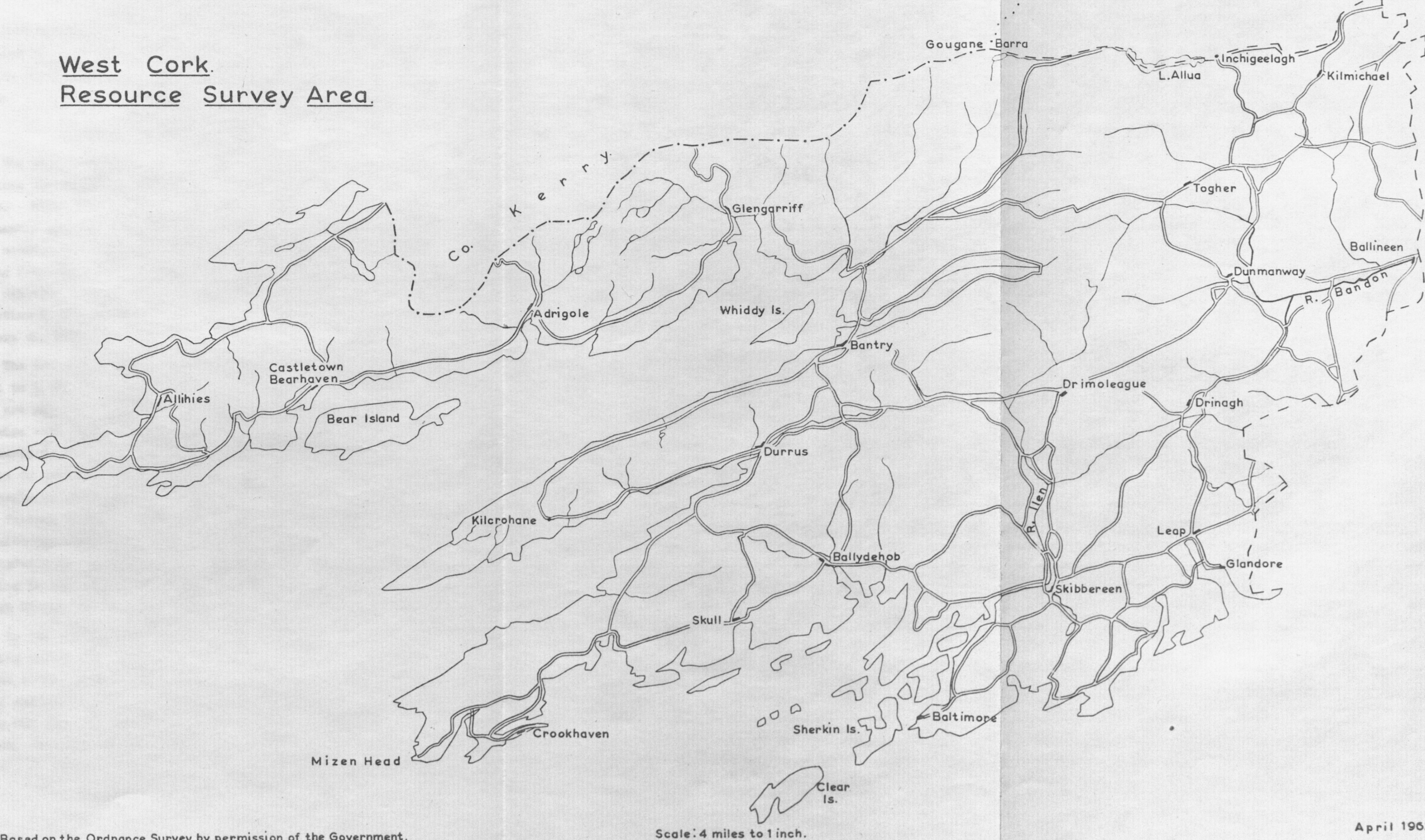
West Cork.
Resource Survey Area.



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Scale: 4 miles to 1 inch.

April 196

Soil Survey of Special farms

Nature of survey

To provide information on land quality at individual farm level 79 survey farms were selected in collaboration with Drinagh Co-Operative Ltd. The farms (total area 4,356 acres) were chosen as being representative of those supplying milk to the Co-operative's branch creameries, and their distribution is shown on the accompanying map. The number of farms surveyed in each creamery area, the total area of these farms and the range in elevation are shown in Table 1.

TA3LS 1: Number, total area and elevation range of the farms surveyed in the creamery areas.

Creamery area	Number of farms surveyed	Area surveyed (acres)	Elevation above sea level (feet)
Adrigole	6	281	100-200
Colomane	8	405	300 - 600
Ca3tledonovan	6	311	500 - 600
Castlehaven	6	251	100-400
Derrygrea	10	505	300 - 500
Drinagh	4	273	5CC
Durrus	5	205	100
Dunmanway	4	290	300
Hawthorn	10	637	100 - 3C0
Kealkil	6	349	100 - 400
Lowertown	10	543	100-300
Mealagh	4	251	400 - 5CC

The farms surveyed are south of a line drawn between G-lengarriff and Dunmanway, and west of a line drawn between Dunmanway and Leap; the most westerly farms being two miles west of Schull. The Mizen Head, Kilcrohane and Castletownbere peninsulas are not included.

The function of this survey was to record the different soils on each

farm (as observed in the field) taking into account the more important soil characteristics and general surface features associated with the soils, and to use this data in making interpretative groupings of the Soils into suitability classes.

Soil Suitability Classification: The major suitability classes, use range and limitations to cultivation of soils found on the farms surveyed are shown (Table ll). Soils in Class 1 vary in iepth from 15 to 30 inches, are mostly well-drained and have few limitations to their use. Class 1 includes soils of the Ross Carbery, Drimoleague, Hadore, Schull, Mealagh and Hen series and those mapped as Bantry Complex A. Being derived from acidic parent materials and therefore by nature lime deficient they require adequate liming for best performance. Potassium levels are low in certain cases and for certain crops but are generally more satisfactory than phosphorus levels which are usually very deficient. These soils are suited to lea-type (arable) farming and respond well to manuring, (See Grassland Production Section in this Report). While it has been shown that with good management it is possible to produce over 80 cwt. of dry matter per acre from grass swards on these soils, many of the pastures are at present producing less than 20 cwt. annually. Using systems of intensive grassland production and utilisation, annual yields of 230 lb. butterfat per acre are obtainable.

Soils in Class 2 are generally similar in nutrient status and manurial requirements to those of Class 1. However, while they may be cultivated they are more suited to pasture production and do not present any serious limitations to grassland utilisation. Rock outcrops (Class 2b soils) preclude mechanical cultivation but horse or hand cultivation is often possible. Class 2 includes soils of the Bunalunn, Driminidy and Clan series. This class also includes shallow phases of the Ross Carbery and Drimoleague series, moderately and strongly sloping phases of the Ross Carbery, Bantry Complex A and rocky phases of the Ross Carbery and Schull series.

Class 3a soils, which occur infrequently, are impoverished, degraded podsol soils of extremely low fertility and are commonly cobalt-deficient.

TABLE 11; Suitability, uae range and limitationa of aoila on farms surveyed.

Major claao	Suitability	Class	Uae range	Type of limitation
	Mainly suitable for cultivated oropa, pasture and forestry		Wile	No serious limitation
	Mainly suitable for pasture, less suited to cultivated crops and mainly of moderate suitability for forestry		Limited	Shallowness, steepness, slight wetness Outcropping rook Imperfect drainage
	Mainly suitable for summer grazing and of moderate to poor suitability for forestry		Very limited	Inferior vegetation, extremely low fertility, wetness (oooasional) Poor to very poor drainage
	Mainly of poor suitability for farming purposes except rough grazing. Poor suitability for forestry.		Extremely limited	Very serious due to outcropping rock, shallowness Wetness, inundation, uneven terrain

Class 3b soils are very unsuited to cultivation in their present condition and, because they are low-lying and poorly drained, their potential under grassland is limited due to severe poaching hazard (especially in winter). Pasture on such soils are mainly rush (jur.cus)- dominant and are confined mostly to summer grazing. Class 3 includes soils of "Hill and Mountain" Complex A and Glasheenahielan series.

Class 4 soils at present contribute little to farm productivity. Class 4a are used for rough hill grazing for sheep, but tend to be cobalt-deficient. This class includes shallow peaty soils associated wirn frequent outcropping rock in the hill areas. Class 4b soils are mainly unsuited for farming and consist of peats which occur in depressed areas interspersed with cutaway peats and are permanently or intermittently waterlogged. Class 4 includes soils of "Hill and Mountain" Complexes C and D and of the Raheen series.

Distribution of soil classes according to creamery areas: The proportion of the various soil classes described above occurring on the total farms surveyed in each of the creamery areas is given in summary form in Table 111. In interpreting this table, it is important to bear in mind that these findings are based on a limited selection of farms, considered typical for each area, but may not wholly represent the true pattern of soil suitability in an entire creamery area.

With the exception of Adrigole, Colomane and Lovrertown, it i3 remarkable that the farms in all the creamery areas have approximately 50 percent Class 1 soils. The high percentage of Class 2a soils in the Adrigole area partly compensates for the shortage of Class 1 soils. Lowertown, which has the lowest percentage of Class 1, has the highest of Class 4a soils. The high percentage of Class 4a soils in Colomane, Castlehaven, Durrus and Dunmanway is also noteworthy, as is also the amount of the very poorest land (Class 4b) in Drinagh. Poorly to very poorly drained soils (Class 3b) occupy 33 percent of the Mealagh area, and from 14.6 to 18.6 of six other areas.

TABU? 111: Soil olaasrn aa *n* percentage of Lhe total farm acreage ourveyed in each creamery area

Creamery area*	Soil olasa per cent of total							
	1	2a	2b	2o	3a	3b	*k&*	4b
Adrlgole	31.3	21.9	6.6	10.3		13.6	6.3	5.0
Colomane	39.6	6.8	*3*2*	8.4		17.3	12.6	12.3
Castledonoren	51.1	3.5	1.7	2.9		14.6	2.7	12.9
Caatlehaven	52.7	5.6	5.4	7.4		2.8	24.1	2.0
Derrygrea	61.1	8.5	3.1	6.4		6.0	7.4	5.7
Drinagh	50.8	3.2	-	3.2		14.9	1.9	25.0
Durrua	47.5	14.1	1.4	7.2		10.4	13.8	*6.3*
Dunmanway	54.2	1.9	1.3	7.4		8.2	17.0	9.2
Hawthorn	52.8	4.4	2.4	3.3		18.3	7.9	11.4
Kealkill	51.4	5.7	-	9.5		17.6	7.1	*5.3*
Lowert own	25.6	11.9	-	2.5		8.1	43.3	7.6
llealagh	*1*2.5*	8 A	2.0	8.S		33.1	1.3	3.6

Aoreages surveyed in eaoh creamery area are shown in Table 1.

TABL2 IV

Range of percentage occurvanco of different soil olasses *on* tlifi survey faros

Creaiaery area	Ho. of fams surveyed	Percentage occurrence rano of each soil olasa							
		1	2a	2b		3«	4*		4b
Adrigole	6	13-64	4-43	1-25	5-22		7-37	0.1-21	2-14
Colomane	8	22-56	2-24	1-21	2-11		10-28	2-24	6-31
Caatledonovan	6	38-59	5-11	2-5	4-8	8-27	3-27	0.4-2	4-21
Castle liav«in	6	37-69	3-10	14-27	3-16		2-4	9-45	4-6
Derrygrea	10	45-80	4-26	7-18	1-13		2-15	0.3-33	1-27
Drinagh	4	36-71	3-12	-	2-4		7-45	0.5-6	4-55
Durrua	5	38-56	3-36	5	8-18		22-28	5-19	2-16
Dunmanway	4	24-77	2-3	5	1-20		7-14	5-15	7-31
Hawthorn	10	30-72	8-17	2-10	2-11		1-34	0.7-16	9-40
KeaUd.ll	6	24-98	2-13	-	6-17		1-36	2-40	5-20
Lowertown	10	3-54	6-41	-	2-14		2-37	8-83	0.4-29
Uealagh	4	34-55	1-21	4	2-37		4-44	3-4	5-20

Range of distribution of soil classes on survey farms: A summary of soil class distribution on the survey farms in the different creamery areas ie presented in Table IV. Examination of the table reveals the extreme variation occurring in the percentage distribution of the soil classes on farms within creamery areas, and also the extreme variation occurring between creamery areas. A aore meaningful picture is obtained if this table is considered in relation to Table 111. Some notable featurea in Table IV are th-t Class 1 soils can occupy as little as 3 percent and up to 93 percent whilst Class 4a soils can occupy from 0.1 percent to 83 percent of total farm acreage. The range of variation is less extreme in the case of the other soil classes but nevertheless they also show a ^ide range in percentage occurrence. Whilst Soil Class 1 occurs on ft"H farms surveyed classes 2a, 2c and 3b each occur on approximately 60 farms, class 2b on 20 farms, class 3a on only 7 farms, class 4a on 70 farms and class 4b on 51 farms. The figures presented in Table IV reveal the wide variation that exists in the qu-lity of farm land in this sample of farms.

Distribution of soil classes according to farm size category: To determine what relationship, if any, existed between soil class distribution and farm size the farms surveyed were grouped into five size categories. Table V shows the percentage of total farm acreage within each of the farm size

TABLE V: Percentage of soil classes in different size categories

Farm size category (acres)	Number of farms in each size category	Soil class, percent of total						
		1	2a	2b	2c	3a	3b	La + 4b
15 - 29	o	60.2	16.1	3.0	5.7	-.-	4.7	13.3
30 - 49	27	56.0	9.9	1.1	7.9	1.7	12.9	16.6
50 - 69	30	46.1	10.0	3.2	6.4	-1.2	13.0	16.9
70 - 89	12	a55.0	5.1	4.1	3.7	-	18.7	?3.3
}Q -1£C	4	48.4	3.1	-	1.7	3.9	3.4	38.3

categories occupied by the various soil classes. The most striking feature is that «.7hereas Class 1 soils occupy a higher percentage of the 15 ~ 30 acre farms and is relatively uniform for the other farm size categories, there is

a very definite increase in the proportion of Class 4 soils with increasing farm size. Thus, tho advantage of large farm acreage tends to be lessened by the occurrence of a relatively higher percentage of inferior soils. Moreover, the lower farm size categories have a higher percentage of Class 2 soils in comparison with the larger farms, which is a further compensating factor.

.-^nary of the range of percentage occurrence of each soil class according to farm size category is presented in Table VT. From this table it is apparent that farms within the same size category show eactreae variability in soil quality which has an important bearing on management and production studies at the farm level.

Relationship of 3oil quality to output: The multiple regression of soil class on the stock carried on the farms (expressed as cow equivalents) was calculated by computer. The regression coefficients of soil classes 1, 2a and 3b were significant at the 10 percent level of probability. Furthermore, the regression coefficients of soil classes 1 and 2a were significant at the 1 percent level, whilst the coefficient for class 3b was not significant.

The multiple regression of soil class on starch equivalent output from the farms was also calculated and the regression coefficient for classes 1 and 2a soils was significant at the 0.1 percent level. Thus there is a very close relationship between the acreages of classes 1 and 2a soils and the number of cow equivalents,and similarly there is a close relationship between the acreages of the soil classes and the starch equivalent output from the farms.

As is shown elsewhere in this Report (cf Grassland Section) output measured either as cow equivalents carried, or starch equivalent produced, is far below potential levels even on Class 1 soils. It has also been shown that the majority of these soils are supporting poor Agrosti3 - dominant pastures. With improved pasture management including the greater use of lime and fertiliser, output from these pastures can be significantly increased, (See Grassland Section). The suitability of the better soils for alternative uses should also receive consideration, bearing in mind the fact that soils in class 1 in particular are physically suited to the more

TABLE VI

Range of percentage occurrence of different soil classes according to faro size category

Farm size category (acres)	Ko. of farms in each category	Percentage occurrence range of each soil olass							
		t	2a	2b	2o	3a	3b	4a	4b
15-29	6	44-80	*6-36*	14	3-14	-	2-9	5 - 9	5
30 - 49	27	31 - 70	1 - 41	d - 27	4-37	4 - 27	2-37	0.1 - 60	4-31
50 - 69	30	12-71	1 -43	4-25	2-17	1 - 35	2-36	2-33	0.4 - 29
70 - 89	12	24-92	2-17	3 -18	1 - 20		1 - 45	0.4 - 18	1 -44
90 - 140	4	14 - 58	5	-	4	4 - 8	2-10	1 -83	2-55

intensive forms of agricultural and horticultural enterprises, when correct management techniques are applied. The results of this survey reveal the great variability of soil quality even at farm level and on similarly sized farms in the Survey area. The study also stresses the importance of considering soil quality as well as farm size in making economic assessments of farming enterprises.

SOIL FERTILITY

An investigation into the nature of certain soil fertility factors was begun in October, 1960. As a first step the nutrient status of soils in the area was investigated to ascertain the extent to which possible nutrient factors were limiting agricultural production. Due to the short-term nature of the survey the classical methods of investigating this problem (namely, laying down field experiments on different crops for a number of years) could not be used. Consequently, considerable reliance had to be placed on recorded data of both soil analysis and crop production.

Soil analysis on routine advisory sasples

Since the inception of the National soil testing service (1948) soil analyses have been conducted on a large number of samples received from soil sampling officers in the West Cork district. A breakdown of the analyses for soil samples from the area, therefore, suggested itself as a potential index of soil nutrient levels. Soil analysis^ 'results for samples received during the 12-month period September 1959 - September 196O were reviewed. Two possible major drawbacks of such an undertaking 3hould be borne in mind: (i) since the greater proportion of soil advisory work conducted by agricultural advisers is on request, a tendency towards sampling the better farmed holdings seems unavoidable, and (ii) the amount of data on the relationship between soil tests ar.d crop response to fertiliser in the Survey area is limited. Furthermore, such correlation data as is available is mainly for tillage crops (potatoes, roots and cereals) and the acreage under these crops constitutes but 16 percent of the total Survey area. However, the sampling officers included Instructors in Agriculture, Land Project Officers and Parish Agents and consequently it seemed reasonable to assume a fairly wide coverage of the soils in the area. An analogous survey conducted on a national scale^ ' yielded some useful data on the 3tate of soil fertility for the whole country.

Peech, M. and English, L., Rapid microchemical soil tests. Soil Sci., 57 : 167 - 195, 1943.

^ ' Walsh, T., Ryan, P.F., Kilroy, J. A half century of fertiliser and lime use in Ireland. J. Stat, and S_0c. Inquiry, 104-137, 1958

All the soil samples analysed were categorised into three broad groups for lime, phosphorus and potassium, namely, "extremely deficient", "deficient", and"moderately satisfactory". These groupings may be interpreted in the light of existing knowledge of soil analysis as representing soils which might be expected to be very responsive, normally responsive, and weakly responsive to the appropriate amendments respectively. Further subdivisions were not undertaken in anticipation of the findings of recent researches that such subdivisions are not very meaningful. A summary of the findings is shown in Table 1.

Lime Status

Lime status of soil samples from the Survey area was as follows:

Extremely deficient	7 percent
Deficient	29 percent
Moderately satisfactory to satisfactory	64 percent

The three lime categories, which are based on pH values only, roughly correspond to lime requirements of 4 tons or more, 2.5-3 tons and 1-2 tons per acre of ground limestone respectively. There are several instances, of course, where these quantities should be increased, particularly in cases of heavier textured soils or for crops having a particularly high lime requirement e.g. sugar beet, barley and root crops. The highest category (pH over 5.8) was selected on the basis of data provided in the soil survey work that no soils containing free calcium carbonate occur in the Survey area. Consequently, some small response to lime applications may confidently be expected for the majority of soils occurring in this category.

While the lime status in the area is considerably more favourable than that quoted for the country as a whole[2] there is considerable leeway to be made up in terms of lime use. This was supported by the general observation of pastures in the area which suggested that the lime status of the majority

• These broad values are applicable to mineral soils only and are not relevant to organic or strongly organic soils where much lower pH values are tolerated.

[3] Gallagher, P.A., and Herlihy, M.P. The interpretive value of soil test results. Ir.J.Agr.Ees. (in Press) 1963.

was far from satisfactory. As a preliminary check random fields were tested using indicators. In most cases the soil pH was below 5.8 and in many cases much lower.

The sea sand subsidy scheme (see Appendix l) which has been operated in the area for a number of years accounts mainly for the liming materials used in the post-war period. However, for various reasons the amounts used are dropping and there appears to be a strong case for the increased use of ground limestone.

Phosphorus status

Phosphorus status for soils from the Survey area was as follows:

Extremely deficient	44 percent
Deficient	43 percent
Moderately satisfactory to satisfactory	13 percent

These phosphorus categories are based on the three main groupings of analysis results found in soil test advisory work. The "extremely deficient" group gives soil test values below 3 lb. phosphorus per acre. This soil group may be expected to show spectacular responses to phosphatic fertilisers for practically all crops. Similarly, the omission of phosphatic fertilization will result in a serious reduction in crop yield and possibly in some cases in complete crop failure.

The "deficient" group represents soils with an intermediate or moderate capacity to supply phosphorus to crops. On such soils considerable response may be expected from crops with high phosphorus requirements (e.g. potatoes, sugar beet). For crops with lower requirements, response to phosphorus may be more problematic and will depend on the manurial history of the soil.

The "moderately satisfactory to satisfactory" phosphorus category represents soils which are in a reasonable state of fertility from a phosphorus supply point of view. Only for the most demanding crops should phosphorus manuring be necessary and also for those soils where a "starter" efi'ect is needed.

The results in Table 1 clearly indicate that the vast majority of the

soils of West Cork are deficient in phosphorus and it may be reasonably concluded that more than 85 percent of those soils would give a highly significant response to phosphatic fertilisers provided other deficiencies are made good wherever they occur. From these' figures, it may be concluded that phosphorus deficiency in the soils of West Cork is probably a major limiting factor in crop production.

Potassium status

Potassium status of soil samples from the Survey area was as follows:

Extremely deficient	36 percent
Deficient	48 percent
Moderately satisfactory to satisfactory	^6 percent

These categories are based on the extent to which crops might be expected to respond to potassic fertilisers rathei* than on the frequency of occurrence of soils in the respective groups.

The "extremely deficient" category represents soils on which all crops may be expected to show economic responses to potassium and on high potassium requiring crops high potash dressings are essential. This group, however, also contains a number of soils that even without potash fertiliser can sustain certain low potassium requiring crops (e.g. cereals) although at a significantly lower than optimum yield level.

The "deficient" category represents soils where a normal potash response may be expected. For some low potassium requiring crops, however, no economic response to potash would be involved, while for potash-responsive crops potash manuring is essential. For satisfactory clover growth in pastures, the soil must for a minimum fall into this category and may be expected to respond to potash dressings.

The "moderately satisfactory to satisfactory" category refers to that group of soils where responses to potash are unlikely except in a few cases e.g root crops. On the other hand care needs to be exercised to avoid conditions associated with potassium induced livestock disorders.

The potassium status of soils from the Survey area is unsatisfactory,

though not to such an extreme extent as for phosphorus. While it is unwise to generalise on the field responses to potassic fertiliser without consideration of other soil factors, it aeeas safe to predict responses to ootassium on up to 50 percent of the soils in the area, particularly for crops with high potassic requirements e.g. clover-rich new leys, sugar beet and other root crops. This has been olearly demonstrated in the output of pasture experiments described elsewhere in the survey report.

Soil analysis on survey farm3 sampled

Because of the possible disadvantages previously cited with regard to basing a general interpretation on advisory officers' samples, a survey of the 3oils of 65 farms selected at random in four creamery areas was conducted in 1961. Each farm was soil sampled in such a manner as to take account of soil type differences and variations in manuring or cropping history in which cases individual samples were taken* Where, however, a number of fields occurred of similar soil type$_y$ manuring and cropping history, *one* was randomly selected and sampled, using regular sampling techniques. All tillage soils were sampled to a depth of 5", and grassland more than 1 year old vjas sampled 0-2" and 2-5". The results are shown in Table 11 where the categories are the same as those quoted in Table 1.

When the lime status (pH figures) for the farm survey (all samples) are compared with those presented in Table 1 the latter shows a slightly happier picture. However, if the calcium figures of Table 11 are taken into account the extremely lime deficient category increases to almost 25 percent. The reason for this is that *no* soils of limestone or pure limestone drift origin occur in the Survey area. Consequently, calcium (and magnesium) levels may be expected to be appreciably lower than in the corresponding limestone derived soils which occur more extensively in other parts of the country. The calcium figures taken in conjunction with the pH figures provide a clear picture of the extent of the liming problem that still persists in the Survey area.

The phosphorus status of West Cork soils (Table 11, all samples) reveals a quite unsatisfactory situation. The fact that over 97 percent of the soils in the area are deficient to some extent, and 82 percent very

TABLB 1

3tatua of llae, pboaphorua and potaealua In »oll aaaplaa fro* tha Surrey ai<ee

(September 1959 - September i960)

		LIMB STATUS			PHOSPHORUS STATUS			POTASSIUM STATUS		
3oU Snapler	No. toil aaaplea aubalttad	Extremely daflolant	Dafioient	Uoderately eutie-factory to aatlafaotory	Extreiely daflolant'	Daflolant	Moderately eatla-factory to aatlafaotory	Extrenaly daflolant	Daflolant	Moderately aetla-factory to aatlafaotory
1	365	6»	22"	72*	43	41	16	27	48	25
2	491	7	23	70	42	46	12	37	49	14
3	157	11	33	56	50	40	10	21	58	21
4	384	5	28	67	52	42	6	37	49	14
	263	11	37	52	48	46	6	45	48	6
	33	16	33	51	42	44	14	-	-	-
	67	3	57	40	43	52	5	21	72	7
	13	15	15	70	23	46	31	-	-	-
	23	6	42	50	52	39	9	-	-	-
10	12	0	25	75	33	42	25	-	-	-
Percent of all aaaplea oocurrlna; la aaoh category		7	29	64	44	43	13	36	48	16

* Percentage of all aaaplea aubalttad by aaeb aaapllAg offlear falling in category

deficient in phosphorus suggests that a lack of this nutrient in the soils of West Cork constitutes a major limitation in production. This finding has been verified for several years by the agricultural advisers who have shown spectacular responses to phosphorus manurial dressings in both experiments and general advisory work. It has been recently verified by fertiliser trials on grassland in the Survey area, and is reported on in the section dealing with Grassland Production.

The position with regard to potassium (Table 11, all samples) while not at all adequate is not nearly so unsatisfactory as for phosphorus. Although 90 percent of the soils sampled may be expected to produce a response to potassium, a very large response may be expected on not more than 50 percent.

Because of the difference obtained in the nutrient categories between Table 1 and 11 (all samples), a further breakdown on the farm survey soil analysis data was undertaken. Samples from pasture (and meadow) soils were segregated from tillage soils and grouped separately in their several categories. The results are quoted in Table 11 as pasture samples and tillage samples. The source of discrepancy between "all camples" in Table 11 and the results of Table 1 can be seen fairly clearly in this subdivision. Bearing in mind that the latter samples were taken by several sampling officers, and that the time of sampling varied widely, the similarity between data for tillage soil samples (Table 11) and that given in Table 1 is remarkable.

A comparison of the tillage soil data and that of pasture soils shows an interesting contrast. The explanation of the more general unsatisfactory conditions as revealed in Table 11 (all samples) as compared with Table 1 may be mainly attributed to the low nutrient status of the larger number of grassland soils in Table 11 which tended to depress the 'all samples* average. This suggests that advisory officers' soil sampling' is mainly concerned with tillage soils where a knowledge of lime status is more essential, and the level more critical for cropping. On the other hand, a visual scrutiny of nutrient impoverished pastures is often sufficient to indicate the general manurial deficiencies.

It i3 obvious that in the Survey area the tillage land receives more lime than the pasture land. The same fields tend to be brought back

TABLE 11

pH. lime, phosphorus and potassium levels in pasture and tillage soils in the Survey are* (65 farms)

Statu*	Per cent of samples in category		
	All Samples (total 643)	Pasture Samples1 (total 50?)	Tillage Samples (total 134)
pH			
Very acid[1]	13.1	15.7	3.0
Acid[1]	30.3	29.2	35.4
Satisfactory[1]	56.6	55.1	61.6
Line			
Extremely deficient[2]	25.0	28.3	11.9
Deficient[2]	33.3	34.6	29.8
Moderately satisfactory to satisfactory[2]	41.7	37.1	58.3
Phosphorus			
Extremely deficient^	81.7	88.3	58.2
Deficient3	16.1	10.4	35.8
Moderately satisfactory to satisfactory3	2.2	1.3	6.0
Potassium			
Extremely deficient*"	56.0	62.3	28.4
Deficient[2]*	35.6	33.0	50.0
Moderately satisfactory to satisfactory*	8.4	4.7	21.6

pH levels are as follows: "very acid", below pH 5.3; "acid", pH 5.3 - 5.8; "moderately satisfactory to satisfactory" pH over 5.8

Levels of lime are as follows (in lb. Ca per acre): "Extremely deficient", 0-800; "Deficient", 800-2000; "Moderately satisfactory to satisfactory", 2000 and over.

levels of phosphorus are as follows (in lb. P per acre): "Extremely deficient", 0-3; "Defioient", 3.5 - 10; "Moderately satisfactory to satisfactory", 10.5 and over

Levels of potassium are as follows (in lb. K per acre): "Extremely deficient", 0-75; "Deficient", 80 - 160; "Moderately satisfactory to satisfactory", 165 and over.

repeatedly into cultivation, leading to a more satisfactory lime status. Large areas of pasture soils in the Survey area are not suitable for tillage and suffer from nutrient exhaustion in consequence.

The phosphorus figures for pastures also contrast greatly with the tillage soils,showing a 30 percent higher number of soils in the extremely deficient category. It may be inferred that a deficiency of this nutrient is a limiting factor at all stages of *"i"*i husbandry enterprise. When taken in conjunction with the lime status, a clear case emerges for the extensive use of the more insoluble phosphatic fertilisers. This observation has also been borne out by the pasture output survey work reported elsewhere in this Report.

Potassium is also much more deficient in pasture soils compared with tillage, the "extremely deficient" category for the former being 34 percent higher. It can be inferred that the potassium status is quite inadequate for optimum clover growth in the majority of pasture soils in the area. If adequate soil potassium is not maintained reliance on clover for nitrogen fixation and nitrogen supply for pasture soils is destined to be frustrated.

While the data on lime, phosphorus and potassium status presented here gives an idea of the extent of some of the fertiliser problems in the soils of the Survey area a serious gap exists in regard to nitrogen requirements and supply. Reliable soil tests have yet to be developed to measure soil nitrogen—supplying power to crops, and even such tests could in some cases be rendered wellnigh meaningless owing to variations in seasonal factors. However, from observations on pastures and tillage crops in the area, it appears that the soils are highly responsive to nitrogen. Little build-up of soil nitrogen occurs under pastures, indeed after initial establishment a serious degeneration sets in (see G-rassland Production Section). Consequently, on breaking for tillage little nitrogen reserves are available for the tillage crops. These factors constitute the main case for the increased use of nitrogenous fertiliser on tillage soils (particularly if the soil has been in tillage for more than tvru years).

The lack of adequate fertiliser dressings probably limits production of tillage crops in the Survey area. With increased applications (4O-6O lb. nitrogen per acre) the high cropping potential of these soila could be realised, and the maximum efficiency obtained from other nutrients,

including lime.

Crop productivity in the Survey area

It is widely accepted on the basis of soil test observations that the nutrient status of Irish soils has shown a decidedly upward trend in the post-war period - a direct function of increased lime and fertiliser use. It seemed obvious to check from existing records the effect this increased fertiliser use had on crop productivity. Table 111 compares the annual yields of different tillage crops in the West Cork area with the national average for the period 1950-'61. The West Cork figures quoted are deduced from yield data obtained from farmers, and in later years from the mean of (where possible) 30 yields in respect of each crop per annum. While no claim is made that the figures are representative, the data are balanced against the general opinion on crops and actual experimental results. Further, soil survey and soil fertility observations indicate close similarity between the tillage soils of the area, and consequently, yield variations are considered to be mainly associated with cropping history and rate of fertiliser application rather than soil type.

Wheat

With this crop (omitting the bad harvest of 1958) the gradual increase in yield of grain over the years in the national average column is paralleled fairly closely in the West Cork area and indeed the average yields for eleven years are as little as 0.1 cwt. apart. However, the acreage under wheat in the area dropped by more than two-thirds during that period.

gata

There is little difference between the eleven year average oat yield in West Cork and the national average. However, no gradual increase in yield is apparent over the years in either case. This situation should not be interpreted as a lack of response of the oat crop to fertilisers but rather to the increased emphasis on barley crops in the cereal growing areas, the more common use of the poorer soils for growing oats, and the misconception that tolerance of infertile soil conditions and lack of response to fertilisers are synonymous.

3arley

Yields in West Cork have been increasing, as has the national average. However, the yields for the former are appreciably higher, an average of approximately 4- cwt. per annua.

Potatoes

There has been no apparent increase in yield in the area over the period, if anything., the reverse is true. The observations made with regard to the oat crop may hold in this case also.

The main weakness in work of this nature, however, is the extent to which the quoted figures represent the 'average' conditions obtaining in the area. In particular the question arises, what variations in yields might be expected and to what factor or factors of soil fertility they may be attributed. To obtain some evidence on this point random crops of oats and barley were selected in the area in ^^€^ and representative small plots (60 sq. yards) were harvested. The results are shown in Table 17.

The mean yields of grain obtained in this ivestigation were considerably higher than those recorded in Table H I . In the case of oats the difference is as large as 10 cwi/ac. for 1961. However, it is also clear from Table IV that extremely wide variations in yield occur on different 3ites particularly as regards the oat crop.

An examination of the cropping records and fertiliser use practice on the barley sites revealed that the higher yields were obtained in the early part of the tillage break and also where more nitrogenous fertiliser was applied. Similar remarks apply equally to the oat crops which, however, received noticeably less fertiliser, which presumably accounts for some of the low yields recorded.

The growing of barley has increased in West Cork from a few acres per annum at the end of the war to more than 5,000 in 1960-'61. It is claimed that barley growing in the area as a serious farm enterprise dates from the introduction of indicator pH soil tests by the agricultural advisory officer in the area in 1944. These tests first established the extent *of* soil acidity problems in limiting the production of acidity sensitive crops in West Cork.

TABLI 111

Coapariaon of ylalda of oropa grown in faat Cork with tha national averages of tha aaaa orope, 1950-61

Yaar	Whaat[1]		Oata[1]		Barley		Potatoes		Sweden[2]		Mangela[2]		Fodder Beat[2]	
	W.Cork	Nat.AT.	W.Cork.	Nat.AT.	W.Cork	Nat.AT.	W.Cork	Nat.AT.	W.Cork	Nat.AT.	W.Cork	Nat. AT.	V. Cork	Nat.AT.
1950	16.0	17.9	17.4	17.2	22.3	19.3	11.1	6.5		15.6		16.8		
1951	19.9	17.6	20.9	18.6	28.3	21.0	13.0	8.6		17.1		17.8		
1952	21.2	20.6	20.5	18.9	32.0	22.1	11.6	8.6		15.7		17.0		
1953	21.7	23.2	21.0	19.9	30.3	23.9	12.2	8.8		16.9		18.7		
1954		20.1		17.8		21.7		7.7		18.0		19.0		
1955	17.1	22.3	20.5	20.8	26.8	23.1	10.4	7.4	16.8	17.4	22.0	19.9	18.7	
1956	29.0	25.1	20.9	20.4	28.5	26.6	12.6	9.2	18.8	19.0	21.7	20.5	16.6	
1957	28.7	25.3	20.5	18.7	28.0	25.1	10.7	8.8	17.0	19.7	19.5	20.6	17.1	
1958	17.7	16.5	18.8	19,6	19.6	21.3	7.3	7.0	17.3	16.5	17.0	18.1	14.6	
1959	24.1	25.8	19.3	20.6	26.8	27.2	10.6	10.0	19.1	18.3	25.6	22.9	19.9	
1960	23.2	25.2	21.0	19.7	27.6	26.5	9.3	7.7	18.9	21.0	26.7	n.a.	21.3	
1961	24.6	26.8	20.3	20 A	29.9	28.1	10.3	9.9	19.4	21.5	25.7	n.a.	21.0	
Uaan	22.1	22.2	20.2	19.4	27.3	23.8	10.8	8.5	18.2	18.1	22.6	19.1	18.9	

Cereal ylalda in owt. par acre. Barley figures for national average are for total barley (i.e. both feeding and salting). The amount of nalting barley grown in Weet Cork ia limited.

in tone per acre.

TABI3 17 Oats and barley yields from random sites in Survey area, 1961.

OATS

Site	Grain yield, cwt per acre	Site	Grain yield, cwt per acre
A	17.1	I	25.5
B	24.2	1	32.3
C	24.1	0	21.5
D	30.3	P	39.9
S	28.2	Q	41.9
F	50.1	1	39.2
G	38.9	S	41.1
H	25.9	T	34.0
I	35.7	U	46.2
J	28.4	V	40.8
K	25.9	Y	34.2
L	35.0	X	47.9
lean	30.3	Mean	36.0

A review of the cropping and fertiliser use history on the surrey farms yielded the following qualitative points:

(1) Highest tillage crop yields are usually obtained in the first two seasons after .the-tillage break.

(2) After those two years all the soils appear very responsive to nitrogen suggesting that whatever build-up of nitrogen occurred during the grassland stage has been mineralised by that time.

(3) The fertiliser use pattern appeared to be surprisingly variable; some crops are adequately fertilised, others receive no fertiliser, while others receive variable mixes.

(4) The fertiliser most used is superphosphate (either straight or.as a compound or mix), and the N:P:K rates appeared to be mostly 1:3:1.

(5) Wheat, and (especially) barley, receive greater amounts of fertiliser than oats.

APPENDIX 1

The Sea Sand Subsidy Scheme

The sea sand subsidy scheme is operated by the Cork County Committee of Agriculture and cost3 an estimated £12,000 per annum, half of which is defrayed by the Department of Agriculture. The scheme is confined to West Cork and to farmers who reside ten miles or more from the ground limestone plants at Crookstown and Aherla. The scheme provides for the payment of a subsidy of *3/6* per ton for sea sand of a "high CaCO, (caloium carbonate) content landed by boats or taken from the foreshore.." The maximum quantity of sand for which any one person may receive a subsidy is 16 tons, irrespective of the number of holdings for which he is rated.

While the County Committee of Agriculture stipulate sea sand of high CaCO, content they do not specify what the lower total neutralising value (TNV) limit should be nor do they designate good sea sand sources. No reliable data is available as to the extent to which the scheme has been availed of in the area. Official returns of the Department of Agriculture in terms of subsidies paid for the period during which the scheme was in operation are available for the whole of Co. Cork. Figures for the total tonnage of sea sand delivered in Co, Cork are given in Table V,

TABLE V: Tonnages of sea sand delivered in County Cork.

Year	Tons
1947 - 8	71,000
1948 - 9	65,376
1949 -50	65,000 (estimate
1950-51	60,000 (estimate
1951 -52	63,257
1952 -53	65,700
1953 -54	64,079
1954 -55	63,953
1955 -56	67,'47
1956 -57	59,340
1957 -58	60,421
1958 -59	53,610
1959 -60	50,370

It is surprising that with this extensive use of sea sand the lime status

of the soils in the Survey area is not more favourable, which may reflect on the poor neutralising value of the sand being U3ed.

There are two main difficulties limiting the use of sea sand in West Cork. First, there are extremely large variations in the calcium carbonate content of the sand gathered (figures for samples submitted range from 1 to 68 percent) and samples from any area are not consistent in CaCO, content. An indication of the range of neutralising values and quantities of sea s&nd from various sources in the Survey area is given (Table VI).

As far as can be ascertained, &oleen sand (from the Crookhaven/ Lissagriffin Dough/Barley Cove area) is the most widely used sea sand in West Cork and it finds its way aa far north and east as Bantry, Drimoleague and Skibbereen. The poorer quality 3ands of theRoss Ckrbery area are used from Drimoleague to near Dunmanway and in the Leap area. However, not all sand used within the Survey area comes from West Cork shores. Transport facilities play a large part. For example, large quantities of sea sand have been transported by rail from Clonakilty via Dunmanway and Drimoleague, and has been traced south as far as Derreeny Bridge, 4 miles north of Skibbereen.

The quantity of sea sand now being used is falling off (Table V). The main reason is that the bulk of high quality sea sand used formerly in the area came from Bantry Bay where the material was recovered by dredging between tides. However, the sand boats in that area are now idle.

The second reason is that of increasing expense. The actual distance of transport is not the important item of cost (within certain fairly wide limits) but the amount of handling to which *zhe* sea sand is subjected, i.e. collection at the foreshore, transport to highways, loading, unloading, spreading. Consequently, ground linestone, because of its much higher total neutralising value (TNV) i3 becorrdng the more convenient lime - source and would possibly replace sea sand entirely as a liming material were it not for the subsidy on the latter. In vie." of these facts a new look at the use of ground limestone in West Cork might be rewarding.

TABLE VI

SOURCES AND QUALITY OF SEA SAND IN THE SURVEY AREA *

Location	Total neutraliaation values. per cent		Remarks
Owcaahinche	7 - 8	7	Little aaed
Ross Carbery Sua ad (The Varreo)	6-17	12	Heed to some extent ia «••(part of survey ctea
Leap	20 - 55	35	Dredged sand, used much leas than formerly
Saadycovc Strand	17 - 26	22	Used locally, hard to get at and mast he brought in panaiera oa horseback to loadiag site
Tialogac Strand	45 - 50	47	Fair amount used locally
T'agumma Strand	5-10	8	Vary amall amount aaed locally
Tra na nbo (off Lough Ine)	70	70	Dredged. Small amoaat aaed la Baltimorcydiatrlct
Sherkin laland (Silver Strand)	33 - 60	35	Little aow used, aoae subsidised la 1960
Off Baltimore		15	Believed aot aow dredged
Hare, and Calf Ialandi		33	- do •
Toormore Strand	22-37		Small quantity may he uaed locally
Ballyrisode Strand	34 - 64	36	- do -
Liassgtiffin laland (Barley Cove, Dough)	48 • 60	55	Extensively ased as fat as Baatry aad Drlmolctgue
Cockle Strand (Crookhaven)	58 - 60	59	- do -
Ban try Bay	33 - 64	45	Dredged from hay, nor known if still used
Carbury Ulana tD.nmiaui Bay)		70	Noae used, deposit amall, still material

* Data cupplied by Mr. D.A. Feelcy, Inatnictor in Agriculture, Skibbereen, *Co.* Cork

SECTION B

SOME ASPECTS OF THE PRESENT AGRICULTURE

PRODUCTION PATTERN IN THE SURVEY AREA

CROP HUSBANDRY IN THE SURVEY AREA

Introduction

Because of the mountainous nature of much of the area, the possibilities for crop production in West Cork are rather limited. As shown by the soil survey only about 30 per cent of the area (the brown podzolic soils, the brown earths and some alluvial soils) can be considered as arable, or suitable for general cropping. Moreover, this does not take account of situations which because of being exposed, washed by sea spray, or steeply sloping, present special difficulties in cropping practice. A solution to the problem of low productivity in the area is therefore, not to be expected from improvements in crop husbandry, though some general improvement in this sphere is possible.

The low level of farm income must, because of economic stresses created in the home, have a significant effect on population movement from the area. This aspect is discussed in detail in another section of this Report. In this article, the possibilities of increasing farm income, by raising the productivity of the limited arable acreage in the area, will be discussed. Crop husbandry in the present context does not include pasture or hay crops, the improvement possibilities and potential of these are discussed in the "Grassland" sections.

General considerations

Taking the average size of farm in the area as 60 acres, less than 30 percent of which may be arable, and assuming a four course rotation, the average area devoted to any one crop on a particular farm would be 3 to 5 acres. This means that cropping cannot be as highly mechanised as in other parts of the country. The small acreage available for these crops makes it all the more necessary that high yields should be obtained. Present yields of ruost arable crops in the area, as shown in the "Soil Fertility* section, although comparable with the national averages are still too low.

From the limited amount *of* data collected and from general observations in the area, it is obvious that the yield of most crops could be substantially increased through (inter alia) the adoption of better practices of weed and disease control. As far as is known there is no seed dressing machine in the area and practically all of the oats would seem to be sown undressed* This must of necessity limit yields from such causes as Helmithosporium and wireworm. The use of seed dressing on root crops is, however, quite widespread, and the use of sprays for the control of potato blight is about normal for the country. The consumption of weedkiller of the lfCPA type in the area has been estimated by a member of the trade as being about 400 gallons per annum. This would correspond with one acre in *every* thirteen of cereals, being treated with this inexpensive, but highly effective pesticide. Soae needs ere >>e culler to the ore?., but ere not of major importance in tillage crops. The limiting factor in control measures, however, appears to be lack of sprayers or machinery contractors in the area.

There is a high proportion of hedges and fences relative to the acreage of land. These fences are expensive to maintain with hand labour, but when neglected give the appearance of dereliction. A hedge cutter on a co-operative basis or for hire might release some labour for more productive purposes. Furze (Ulex spp.) which abounds in many of the mountain pastures, and blackberry or briar , which is ubiqituous in hedgerows, could be conveniently and inexpensively controlled by means of "brush weedkillers[n]. The more widespread use of many of the newer type of herbicides might enable the acreage of kale and root crops to be expanded considerably.

Possibilities in regard to particular crops

Wheat: Wheat, once considered a remunerative crop for the small farmer, has become less so since the advent of mechanised methods of cultivation and harvesting. As might be expected, wheat is not an important crop in West Cork since the small and irregular fields and the general terrain in many oases, hamper the efficient use of machinery. The acreage under wheat in the area has shown a steady decline since 1926, Figures for total acreage under this orop quoted in the section on "Economic Aspects of the Survey Area" show a decrease from 3,270 acres in 1926 to 595 acres in 1960. The

most common varieties grown are Atson and Atle in about equal proportions.

Barley: For barley the same general considerations apply as in the case of wheat, i.e. for the most part it can be grown more economically elsewhere. However, there is the possibility of obtaining a better return from barley if the crop can be used on the farms on which it is grown. Pig-keeping is one of the main livestock enterprises in the Survey area, there being 172 pig3 per 1,000 acres of crops and pasture, as compared with 83 as an average for the whole of Ireland. This is to be expected, since farmers with poorer land must derive a large part of their income from farmyard enterprises. The acreage of barley in the Survey area, has been increased considerably in the last decade and the present acreage (5,127 acres) is capable of providing the energy requirements of about one-eight of the pig population in the area. If the oats at present being grown were replaced by an equal acreage of feeding barley, where soil conditions permit, then approximately one-half of the energy requirements could be provided from home resources. There may, however, be limitations to the extent to which this can be done, and farmers generally seem to be convinced that the possibilities for expansion in this direction are limited.

A survey of farmer opinion carried out in 1961 showed that 57 percent believed that it was not feasible to increase their present : acreage of barley. Of these, *2k.* percent considered that dairying gave more profitable returns from the land, 20 percent considered that the land was unsuited to barley, while another 20 percent claimed they would grow barley if labour problems could be overcome. By the latter was meant lack of tillage machinery on undivided farms, or the absence of tillage contractors in the area. The growing of barley on a wider scale for livestock feeding would also necessitate the provision of ample drying and storage accommodation, either on the farm or at a central depot. The varieties at present grown are Banba, Herta and Ymer in that order of importance.

Oats: This is by far the most widely grown cereal in the area. Under the present circumstances it i3 difficult to see the reason why this should be so. The horse population in the area is 70 percent of that in 191⁄»., but the acreage of oats per horse is now more than one and a half times that in *13-\U..* The poultry population is also less and the number of young cattle

practically the same as in ^9^^•• At present most of the seed is imported from Scotland and Denmark, Varieties grown are Victory and Sunn 11 (in approximately equal areas). There seems, therefore, no justification (except perhaps soil conditions) why the present area devoted to oat3 should not, in part at least, be changed to barley. Such a change in itself will not remedy the position of low farm income, but it should help to keep in the area, money spent on feeding stuffs which are either imported, or grown in other parts of the country.

Potatoes: Although there has been a steady decline in the acreage under potatoes in the Survey area (1926 - 10,233 acres, 1960 - A-,323 acres) the area is 3till about self-sufficient in potatoes for human consumption. The varieties grown are Klerrs Pinks (which constitutes 98 percent of the main crop) and Arran Banner. Early varieties grown are mainly Home Guard (90 percent) and Epicure (5 percent), with British Queens as the only second early variety. The distance from the nearest major market (Cork city), together with the high cost of public transport make the growing of ware potatoes for sale an unattractive proposition. Although the area appears suitable for growing seed or early potatoes, the former are not grown to any extent there. The high winds so prevalent in the area, should make it relatively free of aphids. Facilities for inspection of the crop by the Department of Agriculture are available in the area. In recent years the price of seed potatoes has seldom been less than £20 per ton and yields of 5-6 tons per acre of marketable "seed" would be considered normal.

The question of early potatoes is treated more fully in the section on Horticultural Crops which follows.

Sugar Beet: This crop is grown to a very small extent in the area, but as the prospects of increasing the national acreage at present seem to be rather limited it would be unrealistic to consider that West Cork could expect a major expansion in the area devoted to this crop for the present at least. However, some of the arable soils in the area would be quite suitable for this crop if expansion were contemplated.

Fodder Crops: In the Survey area generally it is perhaps true to say that it is shortage of capital more so than of labour which limits agricultural output in terms of crops grown for livestock feeding. On this

question, Moore[1] states that "where land is the limiting factor the emphasis should be on kale, whereas when labour is the limiting factor the emphasis will 3wing towards grazing". This is illustrated in Table 1 adapted from Moore[v] ' which sets out the yields of starch equivalent obtainable from different crops and the respective labour contents involved.

TABLE 1: Yields of starch equivalent from fodder crops, and man-hours required for their production.

Crop	Starch equivalent lb. per acre	Labour content	
		Man-hours per acre	Man-hours oer ton starch equiv.
Grazing	1,000	10	7
Swedes	4,000	100	56
Fodderbeet	6,000	115	43
Kale (grazed)	4,000	40	22
Arable silage	2,400	30	28
Fodder maize	4,900		

The average yield from grassland in the Survey area is approximately 1,000 lb. starch equivalent per acre, but on the better pastures it may be as high as 1,600 lb. per acre. By growing fodder crops of the type mentioned in Table 1 on the arable land, yields of 4,000 to 6,000 lb. of starch equivalent per acre could be readily obtained. Two acres of kale would therefore provide a maintenance ration for S cows for one hundred days. Expressed in another way, each additional acre of well grown fodder crops should enable the herd to be expanded by 1*r - 2 cows. Each additional cow, at current prices, represents an income of approximately £1 per week.[2] -

It must not be assumed, however, that sufficient labour for the growing

(i) Moore, I. 196*0. Winter Keep on the Farm. *Fanner and Stockbreeder' p.p. 91 - 33

(2) O'Connor, R. 1959. The Economic Utilization of Grassland. Jour. Stat, and Social Enquiry.

of these fodder crops is available in all instances. Recent statistics show that the labour content on a number of the holdings in the area is at a level that is limiting especially with regard to enterprises with a high labour requirement.

Industrial crops

For the production of most other crops West Cork is at a decided disadvantage relative to more fertile parts of the country. However, for fibre flax growing the area may have an advantage, as there is a tradition for the production of this crop, which went out of cultivation less than twelve years ago. It would seem, therefore, that this skill in growing and handling of fibre crops that may 3till be retained by certain members of the community may represent one of the more agriculturally important resources in the area.

Flax: It is generally agreed -that the best flax grown in Ireland (either North or South) was that which came from West Cork. ' Between 194.6 and 1948 flax to the value of £200,000 was grown in the area. What the seed potato trade is to the small farmer in part3 of Donegal, and the saving of peat to the people of Connemara, such was the position of flax in West Cork, Since the disappearance of this crop the area has been devoid of any corresponding source of income, and the rural population has shown an increased rate of decline in the same period. It is not contended that the absence of a good cash crop is the sole or even the main cause of migration from the area, but if the causes of emigration are presumed to be economic, it is certainly an important contributing factor.

Reasons for the decline of the Flax Industry: There were two main reasons for t he decline of t he flax industry. Following the high prices paid during the war, the acreage of flax increased yearly up to 194-5. With the resumption of normal supplies it became increasingly difficult to dispose of the Irish crop at an economic price. Legislation was therefore enacted with the objects of restricting the acreage, and subsidising the price to a limited extent (4,5). In 1948, with the withdrawal of price support production

Lamour, H,, (Edendeny Spinning Co., Belfast), 1960, personal communication

**' Anon, 1936. Flax Act (1930 Stationery Office, Dublin.

(5) Anon. 1943. *lax Development Act, Stationery Office, Dublin.

of flax in the Republic of Ireland virtually ceased.

There are, however, other factors which contributed to the decline of the flax industry particularly with regard to the economic production of the crop itself (making it raore or less independent of Government price support). Varieties raised were not the m03t suitable. The variety grown was mainly Liral Prince which was prone to lodging on moderately fertile soils. The variety Concurrent which was of Continental origin gave somewhat better results but was unpopular with buyers due to the white blossom. Varieties such as Weira and Hykleiraa and Reina will, under conditions of high fertility, outyield Concurrent by at least 20 percent. Factors such as the poor quality of the wartime seed, the low level of fertiliser use, and the failure to control weeds, also contributed in depressing the yield to an uneconomic level. The average yield of fibre for the latest years available has been given by FAO as between 400 - 500 lb. per acre. This represented the total return to the grower, as no attempt was made to salvage the seed. Due to the fact that it was retted in ditches and ponds, the fibre produced was dark in colour and in many other ways also was- much inferior to the Belgian product. Irish flax of such indifferent quality fetched as high as £3 per stone during the war, but at present fibre of comparable quality can b e purchased for approximately £1 per stone.

Future possibilities of Flax: TThile the cultivation of flax in this country has virtually ceased, considerable quantities are still being grown in the densely populated areas on the Continent (Table ll) * where yields in the region of 1,000 - 1,500 lb. of fibre plus 700 - 1,000 lb. of seed per statute acre are obtained.

In recent years, experiments with flax have been carried out by An Foras Taluntais, using Continental varieties. Even at the experimental level yields of up to 1,000 lb. of fibre plus 6 cwt. of seed per acre have been

^ ^Anon. I960. Production Yearbook. Vol. 14 FAO, Rome p. 140

(7) non. linen Trade Circular and New Fibres Review. Cater Publications, Belfast. (Dec5.1962) p.17

riedericl:, J.C. Free. IV Intern. Tech.Cong, on Hemp and Flax pp. 116 - 148

TABLE U

AREAS UNDER FIBRE FLAX IN DIFFERENT COUNTRIES

(Areas in J.000 hectares. 1 hectare - 2.47 acres)

Year	USSR	Poland	France	Netherlands	Belgiium	Czechoslavakia	Ireland (26 Counties)	Co. Cork	Value of Co. Cork crop *
									£
1948			31	19	30		8	1.3	189.600
1949			38	20	26		6	0.5	42,000
1950	1.679	96	36	18	24		4	0.6	72,000
1951			55	30	34		5	0.9	190,000
1952			56	34	32		4	0.5	65.000
1953			42	27	32		2	0.2	22,000
1954			44	30	33		0.8	0.2	21,000
1955			58	32	35		0.8	0.1	18,000
1956			55	27	34		0.5	-	-
1957	1,687	133	45	22	26	54	0.2	--	-
1958	1.595	98	39	16	24	56	0.08	-	-
1959	1,605	107	27	16	21	56	0.08	-	-
1960			44	25	29		-	-	-
1961			47	25	28		-	-	-

• Estimated

obtained. At present prioes 1,000 lb, of fibre plus 700 lb. of seed would give a cash return of approximately £100 per aore. In addition, a valuable by-product in the form of insulating board can be made from the shives. At present no factory in Ireland or the U.K. produces this material. Keoent reports(9) show that approximately 12,000 tons of this material, valued at about £m_t are being imported into England annually. The nain exporting countries are Belgium and Poland.

Apart from the question of low financial returns from flax in recent years, the main objections to its revival appeared to be the hardships associated with retting on the farm, and the variations in prioe of scutched fibre due to the many different qualities of flax obtained.

It seems reasonable tc suppose that most of these difficulties oould be overcome by the establishment of a Belgian type of rettery. This agency, which would purchase the flax from the farmers soon after harvesting, would carry out the processes of deseeding, retting and scutching by the most efficient methods available, and sell the fibre to a spinning mill. A typical Belgian rettery (of which there are 450 in the vicinity of Courtrai) would employ about twelve men all the year round, and handle the produce of approximately two thousand acres. The cost of such an installation including machinery would be approximately £50,000 (See Appendix l).

The investment of this sum would give a gross return of approximately £160,000 per annum to the farming community in the area, approximately £40,000 to the rettery and at the same time provide continuous employment for about twelve people. There would be no raw material to Import (the area being assumed self-sufficient in seed), so that the £200,000 would virtually be income for the area.

Heap; Hemp is widely grown in countries where snail farms and hand labour predominate, the principal areas of cultivation in Europe being Italy, Yugoslavia, Spain, Roumania and Poland. Although native to a warmer climate than ours, hemp, like the potato, appears to be quite well adapted to the Irish

^Anon., The Timber Trades Jour. (May 14, I960) p.84

* Appendix 1 presents "Costs of a proposed hemp rettery" by J. Sugrue, B.E.

climate. Experiments carried out by An Foras Taluntais in recent years, have shown that yields of 15 cwt. or more of fibre of excellent quality can be obtained here. At present prices, an acre of this crop would give a return of approximately £135. There is an excellent world market for first quality fibre as many countries e.g. Italy, are retaining their entire crop3 for domestic use. Much of the inferior hemp at present on the market would not be saleable if a better product v?ere available. The general techniques of cultivation, retting and handling of beep are similar to those of flax except that the crop is cut rather than pulled. Because of the higher yield of fibre per acre from hemp, and the lower labour content, this crop, if it continues to prove successful under experimental trials might prove more profitable than flax and -ii~ht therefore go into general cultivation in Ireland.

To make the growing of this crop as competitive as possible, it would be best to begin in an area where the conditions were most favourable. In this respect »7est Cork has two distinct advantages; there is the nucleus of a tradition in handling fibre crops, and the climate is amongst the mildest and most frost-free in the country. The main disadvantages would be the scarcity of first-class tillage land, and the degree of exposure. This would limit the potential area for this crop, but it should still be possible to produce ultimately about one thousand acres annually, which would represent the quantity imported into Northern Ireland annually.

On the basis of the present information, hemp might be a better prospect than flax, but it would seem that either crop, properly grown, would be a valuable addition to the economy of the area.

Linseed: The growing of fibre flax by modern tpchniques would also give an appreciable quantity of 3eed from which both oil and linseed cake could be obtained. The latter might find a use in the compounding of balanced rations for pigs and poultry.The growing of flax for oil alone for pharmaceutical purposes, however, is a doubtful proposition because of the availability *of*

Neenan, M. and Lamb, J.G-.D. 1962 Farm Research News (An Fcras Taluntais) July - August p.p. 72 -

cheap supplies from the Argentine and Canada.

Oil crops for pharmaceutical purposes; Reilly^" ' records that in Dorset in 1922 "a large area was given over to lavender and other fragrant plants. In the centre of the main crops cf plants wa3 situated a steam distillation unit for the separation of the volatile oils'*, and again "the small growers had also a London market at Hinching Lane where odorous plants, herbs and crude extracts, found ready sale". Subsequently Reilly, Drumm and Boyle investigated the possibilities of producing the oils cf lavender peppermint, camomile, rosemary and dill on the farm of University College Cork. The results obtained were reasonably favourable (12,13).

One of the main problems in growing these crops is the necessity for having an assessment of the quality of the oil, since depending on physical and chemical properties, aroma and flavour, the price can vary enormously from one sample to another. Although West Cork does not possess soils similar to Dorset (which are derived from chalk), it has a climate which is approximately the same. With the use of the appropriate soil amendments it is possible therefore, that some of these pharmaceutical plants might prove worthy of investigation. As in the case of flax it should be possible to s et up a processing station in the area provided adequate supplies of the raw material were available,

General Conclusions

It will be seen that in the case of the normal tillage crops such as wheat, barley and sugar beet the area is, by reason of scarcity of good 30ils, small fields, and difficulty of mechanisation, unable to compete favourably with arable tillage areas in the country. To be a worthwhile proposition, therefore, any crop suggested for the area must (i) be capable of giving £100 or more gross return per acre, (ii) must be incapable of being grown under heavy mechanisation in other parts cf the

. ". 1933. Issential oils and Medicinal Herbs Studies (Sept 1,1933)
?,376*

: t] Dross, P, 3cyle. C. 192b. Scon. **?roc. Roy.Dublin Soc.**

- 1929 **3con.**

?roc. Roy.Dublin Soc. Vol 11 "o.25 p .415-413

country, and (iii) must have some critical requirement, of climate or labour which prevails in West Cork* In this respect the most promising crops seem to be flax, hemp, seed potatoes, early potatoes, and possibly medicinal plants. The possibility of producing varieties of these crops more adapted to the climate and soils of the Survey area also deserves consideration. Extending the areas devoted to the production of crops for animal consumption would, by increasing the stock-carrying capacity of small dairy farms, help to make these more viable without the necessity of major change in the present farming pattern.

APPENDIX 1

ESTIMATED COST OF HEMP RETTING- UNIT

The approximate cost of a unit is £50,000. This unit is capable of a throughput of *30* tons of hemp straw per week and has a pre-retting storage capacity of 400 tons,

A Site Development

(1)	Clearance and levelling of site	£1,000
(2)	Access and site roads	£750
(3)	Storage and water supply	£1,500

B B»-»1d-»nffi

(1)	Storage for 400 tons of straw (Haybam type)	£3,500
(2)	House for deseeder	£1,500
(3)	Betting and drying house	£15,000
(4)	Scutching mill and store	£4,000
(5)	Offices, store, staff facilities	£4,500

C Equipment

(1)	Electrical installation	£2,750
(2)	Boiler unit (2,000,000 B.T.U. per hour and heating system)	£6,500
(3)	Deseeder (DEMAN Type MM. 7)	£700
(4)	Dryer	£2,500
(5)	Flax scutching mill (Depoortere)	£3,000
(6)	Flax Snuffer and flaxtow scutching mill (Depoortere)	£1,250
(7)	Weighbridge	£1,000
	Total for A, 3 <£ C	£49,450

HORTICULTURE

Climate: In considering the characteristics of the area in relation to horticulture the immediate features that come to mind are the earliness and mildness of the climate, and a parallel is often drawn with the extreme south west of England i.e. Cornwall and the Scilly Isles with their highly specialised horticulture. It will he convenient to discuss the climate of West Cork on the basis of this comparison.

Attention should first be drawn to the difference in latitude. West Cork is approximately 100 miles or 1^- further north than Cornwall, and 2 further north than the Channel Islands. Consequently West Cork is less sunny throughout the year than, for example, Cornwall. Penzance has moa daily sun, ranging from under half an hour extra in November - January, to one hour or more extra in April - August. In terms of annual sunshine West Cork receives approximately 1,391 hours as compared with over 1,600 hours for all Cornwall and a large part of Devon. While the sea level winter temperatures quoted for West Cork (Table 11 in the "Climate'[1] section, page A - 12) are comparable with these for Penzance (altitude 55 ft.) and Plymouth (altitude 116 ft.), over the period April to October these Cornish stations are one to two degrees warmer. In terms of rainfall the area with less than 59" (1500 mm) per annum is limited (see Pig.1 in the "Climate" section, page A - 14). This may be compared with the 40"-60" precipitation over the greater part of Cornwall, and the 35"-V0" in the coastal areas of that county.

In summary, therefore, while West Cork compares favourably in sunshine and winter temperatures with most districts in Ireland, when compared with conditions under which Cornish horticulture has developed the area is less favoured as regards sunshine, summer temperature and rainfall. On the other hand winter temperatures are at least comparable, though the heavier rainfall must be set against this.

In Cornwall the main climatic disadvantage is stated to be wind, and strong winds are also a feature of West Cork. In addition to the physical

effects of wind there is the problem of a high salt content in winds from off the sea. In Cornwall some of the most productive areas have an easterly aspect. For this reason West Cork should offer wider scope for the careful selection of sheltered sites due to the winding coastline and the presence of mountain ranges to the north and north-west rather than the plateau topography of much of the inland region of Cornwall. While Cornwall has been taken as a basis of comparison it is believed that these considerations apply in even greater degree to such regions as the Channel Islands and Brittainy.

Topography: In relation to horticulture the topography of the district links up with the remarks on climate in that there is no general shelter from the prevailing strong south-west winds. At the same time the winding indented coastline should offer local scope for shelter from these winds, particularly in conjunction with the planting of trees and shrubs. Some forms of horticultural production would be well adapted to make intensive use of even quite limited areas of suitably sheltered land, especially as some of the good soil types occur in such situations. On the other hand fragmentation of production increases problems of transport. Main crop production could be centred in the larger area of low land in the Skibbereen-Drimoleague-Ballydehob areas.

Soils: Although much of the Survey area is occupied by the rocky Hill and Mountain Complex soils, there are considerable areas of other soil types where tillage operations are not hindered by rocky outcrops or over-small fields. Indeed this problem does not exist to a degree comparable with many other districts on the western seaboard of Ireland.

On the grounds of their physical and chemical properties the most interesting soils from the horticultural point of view are the Schull, Drinoleague and Eoss Carbery series, and, for special purposes, the Schull variant and the Ross Carbery variant (see Table 1, "Soils" section, page A - 21, et seq.).

The soils may be discussed from two viewpoints: (i) the production of specialised crops, (ii) the cultivation of main crops for such purposes as factory processing. In relation to the first category it is of interest that Schull soil and the Schull variant soil occur in coastal districts **where**

the mild maritime climatic factors are at their maximum. These soils (of the Brown Earth type) offer considerable promise owing to their good crumb structure and ease of cultivation. This, together with the udld oceanic climate, facilitates early sowing, e.g.,of carrots, spinach, onions etc. Trials have in fact shown the possibilities from sowing carrots and onions in February. Production of flowers and bulbs, are further specialised enterprises to be considered in these areas. To the Schull soils may be added the R03S Carbery series and the Ross Carbery variant. Although the former is slightly heavier in texture the latter is ameliorated by sand. These also occur in coastal districts, as also do the light textured Drimoleague Series to a small extent. Many of these soil types are located in areas around the heads of inlets where some natural shelter exists that could be augmented by judicious planting. The existence of early potato growing in many of these districts e.g. in the Sheeps Head and Mizen Head peninsulas provides an initial amount of tilled land in selected locations.

From the second viewpoint (the production of main crops) there are considerable areas of Ross Carbery type soils (e.g. in the Skibbereen Rural District) lying more inland. These offer scope for larger scale growing of vegetables such as brassicas, leeks, spinach, and soft fruits such as black currants. (Some 15 acres of the latter are already grown on contract in the Skibbereen-Drimoleague area). The Hen alluvial soils (2,&V7 acres) are also of interest in this connection, especially in view of their excellent physical characteristics, including resistance to winter poaching, provided the outstanding problem of their high manganese content proves amenable to corrective treatment. It is possible that raspberries, with a relatively high manganese requirement, would be worth a trial* Brassicas would be subject to excess manganese injury, for instance, although the cultivation of sugar beet is an indication that with proper treatment vegetables would do well. The considerable areas mapped as Bantry Complex A soil, of generally rather heavy texture, would offer prospects for, e.g. black currant cultivation.

In many localities, therefore, it should be possible to find good combinations of a mild maritime climate, relative shelter and good soils

of the Schull and Ross Carbery series, and more especially the sandy variant of these, for specialised horticultural production. Further inland considerable areas offer scope for mair.crop production. In all cases emphasis is necessary on proper liming and manuring in view of the general low levels of available soil nutrients reported in this Survey.

Horticultural crops for the area

Vegetables; Of the crops that might be grown in the area, in the case of vegetables these might be considered fron the aspect of (r.) those for -.hich the district has special advantages, and (b) those of a more general nature.

The special advantage of the district, at least relative to others in Ireland, (though, as we have seen, not to districts overseas which might be competitors) is its earliness. For vegetables, earliness would rr.iy be an advantage for the fresh vegetable trade and not so much for the processing factories. Possible development in the line of early fresh vegetables would depend on a high degree of organisation right through from the initial sowing, grading and packing and through communications to the final marketing in a streamlined manner. In this connection it may be mentioned that in a large food - and flower-growing area, such as Cornwall, transport and transport costs are regarded as two of the chief problems, even though the area has well developed road, rail and air facilities. In considering particular crops e.g. spring cabbage, the experience in Cornwall should be noted i.e. excellent returns in some seasons, but in others (when crops elsewhere are good after a mild winter) 25 percent of the crop may be ploughed in.

While earliness would not be of special interest for processing, the mild winter climate would have an important advantage in another aspect. This is la the overwintering of autumn sown crops for supplying the factory in winter and spring. Among brassicas Savoy cabbage, broccoli and Brussels sprouts are crops that could be grown, though care would have to be taken to select varieties as far as possible resistant to ringspot disease (e.g. Roscoff varieties of broccoli) which is liable to be particularly severe in

mild coastal districts, and xs not a disease amenable to chemical methods of control. Other crops for which a mild winter climate would be an advantage would include leeks, spinach, autumn sown broad beans, asparagus kale and other kales. The growing of these vegetables could be worked in with the farm rotation with distinct advantages to the vegetable crops themselves, e.g. in Cornwall the finest crops of winter cauliflower and bulbs are considered undoubtedly to follow ploughed-in ley grass.

Tomatoes: In the case of tomato growing the district would have the advantage over some other Irish districts in having good summer sunshine and some saving on heating costs.

Early potatoes: Reference has been made to the existence of an early potato industry in the area e.g. in the Sheep's Head and Mizen Head peninsulas. There may be further scope for the intensification of this effort, from the aspect of varieties, earliest planting dates, best cultural techniques and method and time of sprouting. Sprouting (of special importance) might be organised centrally. Information on preparations for marketing and grading, including pre-packs for sale to supermarkets, and speedy transport would be important.

A good indication of the mildness of the climate is the fact that in recent years growers of small quantities of early potatoes in the area have been able to harvest their earliest potatoes from late April onwards, and regularly from mid-May. This is as early, for all practical purposes, as the Channel Islands which at present ship over £2,000,000 worth of early potatoes to the London market.

Flower production; West Cork would have some climatic advantages, especially as some of the commercial flowers are those which mature in early spring and hence the cooler summers would not be a disadvantage in relation to similar districts abroad, but the higher rainfall might be some disadvantage in its effect of flower quality. Anemones, flowering over the period autumn to spring would benefit from the mild winter climate, particularly if acclimatised stocks could be built up. At present in Cornwall it is considered that stocks imported from the continent could be more winter-hardy, and steps are being taken to remedy this. Violets are

already grown to a small extent adjacent to the West Cork area (G-landore). This crop has declined to a minor status in Cornwall, the reasons including unhealthy planting stocks, hut it must be recalled that this flower has been superseded in the markets to a degree by more showy flowers and has suffered from competition of synthetic violet scent. The prospects for expansion may prove to be limited.

In the production of daffodils the area would seem to have advantages, more especially for the production of early out-af-door types not so hardy in inland districts. Pilot trials by the advisory services have been successful, blooms being sent to the Cork market. Other flower crops offering some prospects would be tulips, irises, polyanthus and some out-door plants flowering in June-July before the general run of garden **flowers** are in bloom, such as stocks and antirrhinums. Outdoor chrysanthemums would be a possibility also. In view of the widespread occurrence in the west of Ireland of the Arum lily as a cottage garden plant outdoor cultivation would be an interesting possibility, as would the production of mimosa (acacia) in earliest spring, a plant hardy in the mildest districts of Ireland.

Bulbs; On light friable sandy soils bulbs should do well, particularly daffodils. There is already an interest in bulb growing on contract in Ireland and the development of the bulb industry in the Hebrides is a pointer. Speed of marketing would not be the vital concern it is with flowers or early vegetables. The foliage disease Ramularia vallisumbrosae (White Mould) would be a hazard in this area of high humidity, .as it is in south-west England. Some varieties are resistant.

Glasshouse flowers: For flowers under glass the valuable market occurs in winter or spring. West Cork would therefore seem to have no special advantages except the possibility of lower heating costs. In the case of carnations, for example, while heat would not be necessary for most of the time the provision of heating apparatus would still be necessary to meet the occasional cold night or cold spell. Heat might also be necessary to maintain buoyant atmosphere conditions in cool damp weather. The disadvantage of the area vis-a-vis southern Prance (where there is a **big**

carnation industry) would be the poorer light conditions in winter and spring, and the high humidity (disliked by carnations). First rate quality would be more difficult to achieve. Once the cost of modifying the local climate exceeds that of transport from more favoured localities profit becomes unlikely.

Handling and transport: With flower production efficient and speedy transport is essential, together with speedy and skilful picking, grading and packing. In the case of daffodils, in particular, the crop has to be picked within a six week, or eight week period, at most. In an early and quickly developing spring there may be gluts due to the dashing of different districts.

Ornamentals: Supplementary to flower production there is a possibility of producing ornamental foliage, e.g. Pittosporum and Camellia, as is done in Cornwall. The Acacia, mentioned above, could also be of value as a foliage plant. Before organising an undertaking dealing with these crops a survey of market potentials would be essential.

Shelter trees: In all horticultural enterprises in the area the provision of shelter from strong winds would be very important. Trees for this purpose would include Curpessus leylandii. Pinus excelsa. P. pinaster. P. cpntorta. poplars, Salix spp. Picea excel3a. P. sitchenais. In this mild district the use of Eucalyptus spp. would be of special interest as fast growing shelter. Shrubs to give shelter would include bamboo, Bscallonia. 01earia spp. Phormium, Griselinia. Hippophae. Pittosporum. Rhododendron ponticum. Ulex flore pleno. Veronica spp. Cotoneaster spp. Lupinus arboreua etc. In some districts farmers have already initiated planting with Pinus insignis etc.

Soft fruita: In the case of fruit, black currants would offer possibilities, given shelter, adequate liming and adequate manuring, together with organised spraying against leaf spot. Strawberries should also do well, especially as soil conditions for part of the area are comparable to those in Wexford. fetrytis might be more prevalent in this wetter climate. An interesting possibility would be the development of blueberry growing in view of the acid nature of most of the soil. Plots put down by & former horticultural adviser in the area gave very encouraging results.

Beekeeping: This might well be a supplementary source of income for farmers in the area. The relatively high summer sunshine of*the area (see "Climate" section, Table 11, page A - 12), would be an advantage in this connection. Improvement in general grassland husbandry with increased clover content would improve the nectar potential of the district. The similarity of some of the soil conditions to that of Co. Wexford (the chief honey producing county) is an additional favourable factor, although in the final analysis test apiaries using carefully selected strains of bees would show the potential of the district. The more southerly latitude compared with Scotland should also be favourable. Any scheme would need to be well organised and closely supervised, for only by application of modern techniques could a significant contribution to production be made. This should include facilities for extracting, grading and marketing honey. Stocks of bees already exist in the district but are usually kept in the most elementary way, moveable comb hives being very exceptional.

Seaweed: The area has a long, generally rocky coast line, and seaweed seeas plentiful, though perhaps often inaccessible. The indications are that it is not used to any great extent as a source of manure, and there would seem scope for greater use in coastal areas.

Discussion

From the sociological aspect the small size of many of the farms makes intensive use for horticultural purposes attractive and this also links up with the complexity of the soil pattern. Where limited areas of, for example, the Schull Series and the Sohull Variant soils occur, horticulture may well be the most productive use (in physical output) to which such localities could be put, especially where shelter is provided by the lie of the land with supplementary planting of shelter trees and shrubs. The experience gained from co-operatively organised dairying in the area should give a foundation on which to build organised schemes for production of horticultural commodities. Since the loss of population has been greatest from the coastal areas any form of horticultural production should be of especial value in affording means to reduce emigration. lor example, the

ScbuH-ToonBorfr-Goleen districts contain many areas of soil potentially useful for horticulture other things, (especially shelter), being equal.

A well organised horticultural industry would supply employment for both *aexe*, the women finding work at the processing factory or at the grading, packing and marketing level. Both full-time and part-time work would be available, the latter covering such aspects as picking of fruit or bunching and packing flowers, with extra demands at peak periods. Hence a range of work covering many elements of the working population would be available. Certain forms of horticulture would have an impact both on the situation that exists of a surplus of male3 over females in the area by providing work for young women who at present leave the area in greater numbers than do the men, and would also have an impact perhaps on the low marriage rate prevailing.

The absence of horticultural traditions and skills might be considered a drawback, but the development of horticultural crops on a contract basis also facilitates the flow of technical advice, demonstration, and marketing methods to the farmer in a way difficult to organise where individual efforts are being attempted by enterprising but isolated growers. Adequate technical advise is vital to the success of specialised enterprises such as horticulture.

GRASSLAND

Introduction

Since about 85 percent of the land of west Cork is used for grazing and about 80 percent of the food requirements of the cattle and sheep comes from grass it is obvious that any increase in grassland output will be clearly reflected in total farm output;

Factors contributing to pasture output can be considered under three main headings, soil, herbage and the animal. In this section the herbage factor is the main consideration with particular emphasis on herbage production.

Data on land use, soils, fertiliser use practice, pasture quality and animal production were collected on a number of farms in the Survey area. From the data certain calculations relating to output of pastures in starch equivalent and butter fat and to fertiliser response were possible.

It is relatively easy to estimate the output from tillage crops but very difficult to measure the output of grassland. The usual method is to estimate the output in terms of animal product and to convert this to units of energy i.e. lb. Starch Equivalent (S»E); 1 lb. S.E. is the amount of foodstuff that would supply the same energy to an animal as 1 lb. of pure 3tarch. In approaching this problem in West Cork it was obviously necessaiy to ascertain first the present levels of pasture production in the area, then the potential levels and investigate the failure and succcess elements operating.

Output of pasture, whether considered as butterfat, starch equivalent or cow-carrying capacity per acre is influenced by many factors, such as yield of herbage, time of calving, type of cow, etc. In assessing true output, therefore, it is necessary to make a critical analysis of each of these factors.

Methods of improving output must be considered in terms of increased economic production and of more enlightened management and utilisation. In the following sections several aspects of the production and of the management and utilisation of pasture respectively are discussed.

PARTI - GRASSLAND PRODUCTION

Survey of pasture production in West Cork

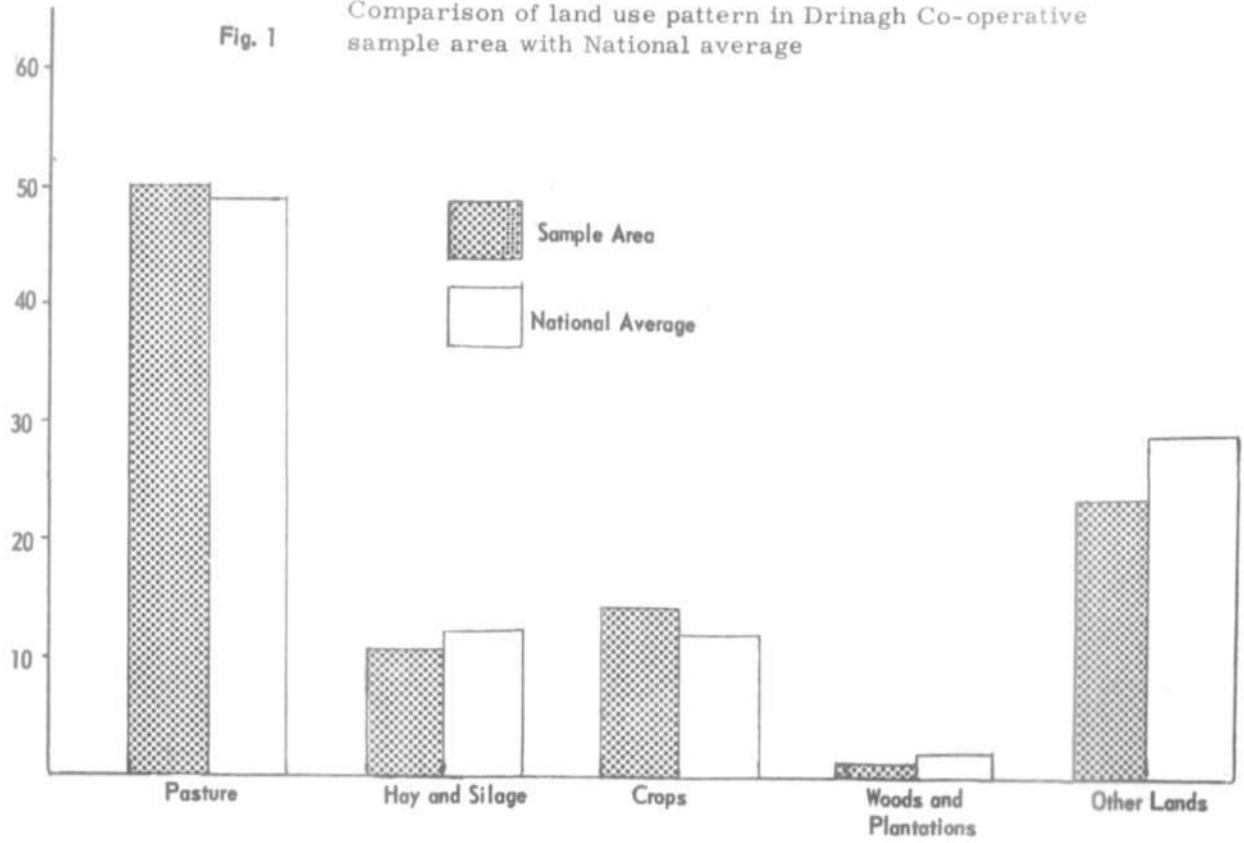
By courtaesy of Drinagh Co-operative Creamery certain statistics in regard to nrllk production, butter fat content, etc. were made available for 120 farms selected from twelve creamery areas for the period 1959 - 1960. Similar figures were later obtained from 80 farms supplying milk to the West Cork (Dairy Disposals Co.) Creameries and the Lissavaird Co-operative Creameries. A follow-up visit was made to each of the 120 farms supplying the Drinagh Creameries and further data were obtained. In addition to the information collected on each farm by the Soil Survey, a reconnaissance survey of the vegetation was also made. The data obtained were analysed statistically and from the results it was possible to draw conclusions of considerable interest.

It should be borne in mind that any results given pertain to whole farms and not to individual fields, and that final output is influenced by factors such as variation in soil, animals, etc. and by the skill of individual farmers. The contribution of each individual factor to the end product may vary from farm to farm, e.g. one farm may have 1 acre of new pasture and another farm 20 acres, and therefore there is some difficulty in assessing the efficiency of the various factors involved in the process. Accordingly, in making suggestions in regard to how the output might be improved, it will be necessary to consider each phase of production as a separate entity.

The output of pastures on farms in the West Cork area

Ten farms were selected at random within each of 12 creamery areas of the Drinagh Co-operative, and the 120 farms represented a total area of 7,195 aores In terms of land utilisation the sample corresponds closely with the national average: .pasture comprises 50 percent, hay or silage 10 percent, other land (mountain and bog) 26 percent, crops 13 percent and woods, etc. 1 percent. The comparison of the land use pattern in the Drinagh Co-operative sample with that in the whole of Ireland (national average) is shown in Figure 1.

Fig. 1 Comparison of land use pattern in Drinagh Co-operative sample area with National average



The average output of pasture on the entire sample farms selected from the three Co-operatives in the Survey area in terms of utilized starch equivalents (S.E) per acre is given in Table 1. It will be noted that there is a marked variation between different creamery areas. In general, yields are considerably below the national average, which is low by European standards (1,2).

In the farms in the Drinagh Co-operative areas butterfat output per acre of total farm area (120 farms) was 27 lb. If the area under pasture and hay in the 120 farms is considered then the output of butterfat per acre was 45 lb. Both these production figures are low by European and New Zealand standards. At 4s. 6d. per lb of butterfat the figures for the survey farms would mean a gross annual return of £6". 1. Od. per acre for all land, or £10. 1s. Od. per acre for land devoted to pasture and meadowing. However, it is not possible to say what proportion of the farm income is provided by the sale of butterfat. The collected data shows that 80 percent of the pasture is consumed by dairy cows. The remaining 20 percent is utilized by replacement stock, working horses and young cattle for sale. It would seem that gross farm income from grassland in the Survey area is in the region of £10 per acre.

Types of pasture in the Survey area

A survey of pasture type was carried out in 34 of the 120 randomly selected farms of the Drinagh Co-operative districts to provide information on the quality of pasture and rough grazing in order to assess the impact of pasture quality on farm productivity.

Procedure; The pastures were classified into a number of progressively deteriorating classes, their distribution was recorded on 6 inch to 1 mile ordnance survey maps and the proportional acreage of each category calculated for the individual farms. This survey was completed on 34 faros. The pasture classes are as follows:

P 1 ¥*irst* quality pastures with ryegrass and white clover contributing 80 percent of the production in a dense sward'

1. O.E.E.C. Technical Assistance Mission No. 123 (Paris), 1953
2. Neenan, M., Murphy, W.E. and Conway, A.. Jour.Brit. Grassland Soc. 14 (2) P. 78, 1959.

TABLE 1: Average utilised starch equivalent (S.E.) in Survey Creamery areas (cwt per acre)

Creamery Area		S.E. per acre of arable grassland	S.E. per acre of total grassland
Drinagh Group			
Colomane		10.6	6.5
Duwnanway		14.4	10.7
Castlehaven		12.8	9.7
Adrigole		15.0	9.9
Real. In 1		13.5	8.7
Derrygrea		12.3	9.4
Hawthorn		14.3	10.0
Drinagh		13.6	7.6
Castledonovan		13.0	8.9
Mealagh		8.8	8.2
Lowertown		13.8	6.7
Durrus		10.5	8.6
	Average	12.6	8.8
West Cork Creameries Group			
Skibbereen		20.0	11.9
Goleen		8.8	4.3
Gurteenakilla		8.*	7.2
Aghadown		11.2	9.8
	Average	9.3	6.4
Lisaacvaird Co-operative Group			
Union Hall		9.6	7.0
Hal Unas earthy		20.4	11.8
Reanascreena		11.5	8.0
Clonakilty		24.1	14.0
	Average	16.8	10.6

P 2 Second quality pastures with ryegrasses being replaced by Yorkshire Fog, Agrostis. Crested Dogstail; the ryegrass or sown 3pecies contributing less than 30 percent of the production.

P 3 Third quality pastures with 10 percent ryegrasses, often Agrostis~dominant but with large contributions from Yorkshire Fog, Meadow grasses, Fescues, and weeds; white clover plentiful.

P *k* Agrostis-dominant pastures with some white clover; ryegrass absent. Crested Dogstail, Red Fescue, Yorkshire Fog and abundant weeds contribute to the sward.

P 5 Similar to P if with some rushes.

P 6 Agrostis species with rushes and sedges mainly contributing to to the sward.

P 7 Agrostis pastures invaded by mixed fern, gorse and scrub.

P 8 Pastures (wet) with 40 - 80 percent rush.

P 9 Furze dominated areas with bracken or some heather.

P 10 Heather dominated areas with Molinia. rush or furze

P 11 Molinia - rush dominated areas

P 12 Lowland bog - swampy

Table 11 gives the pasture classes encountered on 18 of the farms in the size range 30-50 acres, the number of farms on which individual classes occur, the range of percent occurrence of each pasture class and the percent of the total acreage of ail 18 farms occupied by different pasture classes. Similar data is available for the other farm size categories occurring.

The pasture class of most extensive occurrence in this and other farm size categories in the Survey area was pasture class 4 (P4). The relatively small acreage of P 1 pasture is worthy of note and this is even more apparent in the larger size farm categories. The predominance of poor quality pasture swards is very significnat.

A regression equation to assess the effects of these pasture types on stock carrying capacity was calculated. The regression coefficients for P-, P,, P., and P_ were significantly different from zero at the 1

TABTR 11; Distribution of pasture types for 18 farms in the 30 - 5g) acre ai*e category*

Class	No. of faros	Percentage range on the farms	Percentage of total farm acreages occupied
PI	10	3 - 25	4.6
P2	10	4 - 44	6.2
P3a	12	4- 40	8.9
P4	18	5- 80	52.4
P5	12	2 - 38	7.8
P6	5	7 - 11	2.4
P7	9	4 - 24	7.5
P8	8	4 - 54	11.3
P9	15	6- 40	11.1
P10	2	19 - 25	2.6
P11	1	4	0.2
PI 2	2	2 - 18	1.6

percent level i.e. these pasture types contributed approximately the same amount each to output on all farms examined. The other pasture types Taxied in value from farm to farm or the amounts present were too low to have any effeot.

The marginal output of P2 pastures was about 2.8 acres per oow equivalent; for P3, it was 1.8 acres; for P4. 2.9 acres, and for P5 1.9 aorea. The practice of not putting sufficient or any fertilizer on the new pastures would account for the low output of the P2 pastures as these were mostly deteriorating rye grass/white clover pastures. P3 swards consisted of older pastures receiving some fertilizer. P4 swards, which are the most widespread require about three acres per cow i.e. about the same as large areas of old pasture throughout the country. P5 swards, which are damp versions of P4 are very valuable for summer grazing because of higher output.

Output of arable pasture

The distribution of output per acre for arable pasture measured in cwt of starch equivalent for the farms in the sample for the different Creamery areas can be seen in Figure 2. It will be noted that in the case of Drinagh group 68 percent of the farms had outputs between 6 and ^6 cwt starch equivalent per acre, and 52 percent had an output under 14 cwt starch equivalent per acre (the national average calculated by OEEC).(1)

Data of. a similar nature made available by the West Cork (Dairy Disposals Co.) Creameries and the Lissavaird Co-Operative Creameries were examined later and showed two distinct patterns. The farms supplying the West Cork Creameries were more or less similar to the Drinagh farms with 72 percent of them between 6 and 16 cwt. S.E. per acre.

The output from the Lissavaird Croup was higher, 45 percent of suppliers being under 14 cwt, S.E. per acre, and only 47 percent between 6 and ^6 cwt. S.E. per acre and 48 percent over 16 cwt, S..2. per acre.

A few farms appeared to have very high outputs (over }0 cwt S.E. per acre). Some of these high results are of doubtful value as they came from farms with large proportions of mountain grazing which contributed considerably to output. This fact was not taken into account in constructing Figure 2.

Output of pasture, hay and fodder crops

Grassland output also proved poor when measured in terms of butterfat production per acre and acres per cow equivalent. (One cow equivalent >equals one oow giving 600 gallons of milk per annum or the number of other animals that would have the same energy requirements as a 600 gallon cow.) The relationship between these figures and farm size, acres of grassland, hay and fodder crops per cow and butterfat yield per cow for the Drinagh Croup of 120 farms and 40 farms each from lass avaird and the West Cork creameries is shown in Table 111. The figures in all cases are the averages for 10 farms in each creamery area.

1. GEEC Technical Assistance Mission, No. 123 (Paris) 1953

Fig 2A. Drinagh group of 120 farms.

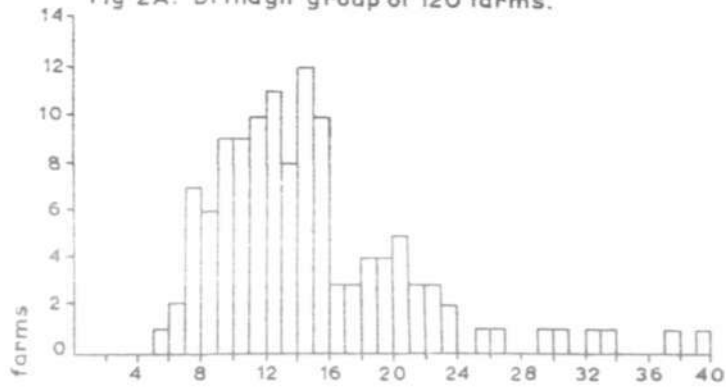


Fig 2B. West Cork Creameries area. 40 farms.

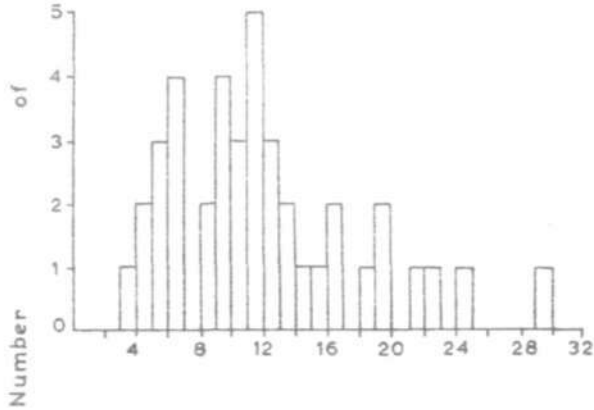
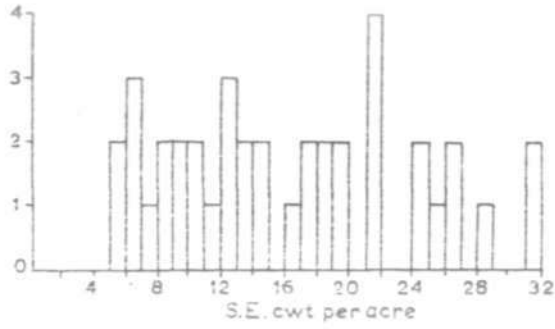


Fig 2C. Lissavaird Co-op. area. 40 farms.



Distribution of S.E production per acre.

Table 111

Average Para Size, Land and Aniaal Output Data

'or 120 Farms in the Surrey Area

Creeueery Area*	Average Farn 3lM,(Aores)	Land P*r Cow Saulvalent (Acres) Grating	Hay	Fodder Crc?s	3u*t? "fnt Produotion	fltO Total grcsing per aore	u TQssland per acre	. .r	
Drinagh Group									
Colomane	67.4	4.3	0.41	0.41		17.9	33.0	134.4	^ ^
Duncanway	60.3	2.6	0.35	0.07		2S.5	47.C	14H.5	*M*
Castlehayen	56.9	3.1	0.32	0.17		32.1	50.6	173.3	^
Adngole	55.0	2.5	0.28	0.12		34.0	60.2	164.3	
Keslkill	64.3	2.4	0.30	0.19		30.6	45.2	152.3	
Derrygrea	46.6	2.6	0.38	0.22		30.6	49.2	16O.5	
Drinagh	86.5	3.9	0.31	0.07		22.8	45.6	155.5	
CastledonoTsa	48.4	2.9	0.37	0.17		24.9	44.3	140.4	
Lowertown	51.1	3.9	0.46	0.19		25.8	60.0	154.9	
Durrus	55.8	2.9	0.52	0.19		22.1	30.9	IW.2	
Hawthorn	67.8	2.7	0.33	0.16		32.1	54.9	174.0	
Mealagh	59.4	3.2	0.42	0.15		24.0	29.3	144.5	
Average for total area	60	3.0	0.36	0.15		27.0	44.7	155.6	
W»st Cork Creameries Group									
Dairy Disposals Company)									
Skidbbereen	50.1	2.8	0.32	0.28		25.1	38.6	144.8	
laen	73.1	5.2	0.30	0.25		15.6	30.6	150.9	
jrteenalcilla	68.0	4.2	O.M	0.22		15.9	17.4	146.3	
<iughadown	34.0	2.8	0.36	0.32		37.4	37.4	154.9	
Average for total area	56.3	3.8	0.35	0.26		20.8	28 A	149.2	
Lissavaird Co-Operative Group									
Union Hall	38.7	4.2	t.25	0.32		25.8	31.6	116.7	
Bel1inascarthy	82.0	1.7	0.17	0.32		34.5	43.0	141.2	^
leanaaoreena	.55.1	2.7	0.29	0.42		37.1	45.8	168.1	fl
Clonaklity	57.8	1.7	0.29	0.21		40.5	41.9	139.3	^ ^
Average for total area	58.4	2.1	0.24	0.30		34.9	41.3	142.6	

Fertiliser use on grassland in the Survey area

Fertiliser practice in the area was also studied. Table 17 sets out some average figures for grassland manuring in the West Cork area in ^$60, For comparison, the figures for fertiliser use on agricultural land (including tillage land)' in Ireland, The Netherlands and the United Kingdom are included. It may be stated that a good general fertiliser recommendation for grassland would be (depending on use):

	Fertiliser, lb. per acre		
Use	If	P	K
Hay	46*	*36*	*%.*
Pasture	0-46	27	56

It can be seen from these figures and those in Table 17 that fertiliser use practice (both in Ireland as a whole and in the Survey area) for grassland falls far below the desirable level. In practice in the West Cork area some meadows and pastures receive a fairly satisfactory fertiliser dressing and many receive no treatment at all. The more urgent need, therefore, is the extension of fertiliser use practice to more land rather than an intensification of the fertiliser programme on land already being treated. The widespread practice of applying fertiliser to first crop meadows and then failing to fertilise the field in the following years under grazing should be changed. This practice is mostly responsible for the very rapid deterioration of the swards, a.major problem in the area.

Figures for fertiliser use on grassland on the basis of different creamery areas of the Drinagh Co-operative are given in Table 7. There was a very wide variation in fertiliser use practice between the different creamery areas. Average figures indicate that most fertiliser was used on the selected farms in the Hawthorn district and least on those in the liealagh district. Of the total fertiliser applied to grassland one-third of the nitrogen and one-fourth of the phosphorus and potassium were applied to grass for hay and silage.

TABLE IV

FERTILISER USE IN SURVEY AREA, IN IRELAND, NETHERLANDS AND THE UNITED KINGDOM

AREA OR COUNTRY		FERTILISER USED, LB PER ACRE		
		Nitrogen (N)	Phosphorus (P)	Potassium (K)
Surrey Area	Hay and Silage	11.1	11.5	23.0
	Arable grassland being grazed	4.5	6.2	12.0
	Total arable grassland (Hay and grazing)	5.6	7.1	13.8
Ireland*	Agricultural land (Including tillage land)	4.1	6.5	8.5
Netherlands'[%]	ditto	83.2	19.4	48.1
United Kingdom	ditto	25.2	12.7	23.0

I Figures for the Surrey area have been taken from 103 (out of 120 farms) l_n the Drinagh Group. Those from the other 17 wen considered unreliable.

[a] From 'Fertilizers, Ninth Study, 1957 - 60. Production, consumption, prices and trade In Europe and U.S.A', Paria 1960.

TABLE V

FERTILISER USE (LB PER ACRE) ON GRASSLAND IN THE SURVEY AREA, I960

CREAMERY AREA	HAY[1]			GRAZING [1]			HAY AND GRAZING		
	N	P	K	N	P	K	N	P	K
ADRJGOLE	14.2	11.7	23.6	10.1	9.6	25.3	10.9	10.1	25.3
COLOMANE	3.8	10.7	8.7	2.0	2.0	4.8	2.6	3.5	5.4
CASTLEDONOVAN	8.S	8.7	17.1	3.2	3.8	8.3	4.0	4.5	9.6
CASTLEHAVEN	24.9	9.9	27.1	4.9	6.0	13.8	7.8	8.3	17.4
DERRYGREA	16.1	14.0	33.9	4.2	5.7	9.9	6.5	7.3	14.6
DRINAGH	11.3	16.4	31.3	1.7	6.8	13.8	2.7	7.8	15.6
DURRUS	4.1	6.0	8.6	3.1	7.3	9.3	3.3	7.2	9.1
DUNMANWAY	12.4	12.8	34.0	1.7	6.3	13.0	3.3	7.4	16.7
HAWTHORN	17.6	18.0	40.1	13.5	10.2	25.3	14.2	11.3	27.7
KEALKIL	17.6	18.4	36.7	6.9	9.4	14.1	8.7	10.9	17.8
LOWERTOWN	3.9	7.3	17.7	3.3	4.9	8.3	3.9	5.5	10.5
MEALAGH	2.6	7.1	8.6	0.8	1.6	1.9	1.2	2.4	2.9
AVERAGE (103 <•""•>	11.3	11.3	23.0	4.3	6.2	12.0	5.6	7.1	13.8

Th« areaa under each crop «••: hay 639 acroa, grazing 3120 acre* (total 3750)

Fertiliser trials in the Survey area

In view of the unsatisfactory nature of the results of the fertiliser use survey (Tables IV and V) it was decided to put down a short series of fertiliser trials (N and P and K) in the area in 1961 to assess the increased response of grassland to fertiliser application. The sites chosen were at Madore, Drinagh, Drimoleague and Hawthorn.

Nitrogen trial: In this trial each site received a basal dressing of 3 cwt superphosphate per acre. The nitrogen treatments, 0 (control), 1, 2 and 3 cwt calcium ammonium nitrate (20.5 percent If) per acre were applied at the end of February and wire cages were placed at random in the plot3. Herbage under the cages was cut and weighed in nil-April. The first harvesting represents the amount of feed material available from the plots for early grazing. Samples were analysed for dry matter content, nitrogen, phosphorus, potassium and magnesium. The results of the first cut (in cwt of dry matter per acre) are shown in Table VI. It should be borne in mind that 1 cwt of dry matter per acre would provide at least 4 days grazing per cow.

In two of the old pastures yields and responses to nitrogen were low showing the unsuitability of the old pasture for early grazing in the area. For comparison the result of applying 2 cwt of nitrogenous fertiliser in a series of trials throughout the country in 1960 was to increase the number of cow grazing days per acre in spring from 55 to 89. The results obtained in the new pasture (Table VI) would be comparable with this. The experiment was continued and yields obtained for the entire season are shown in Table Vll. It will be noted that new pasture gave very high yields but the old pastures, except the Drinagh site, were very poor even at the higher nitrogen applications (although showing a definite response).

This trial shows up the need for nitrogen, but for high yields good quality swards are also a primary essential.

Phosphorus-potassium trial: This trial was designed to determine the responses to phosphorus (P) and potassium (K), with and without nitrogen (N). Two sources of phosphorus were used, superphosphate and basic slag. Rates of application (per acre) were : nitrogen 1.5 cwt as calcium ammonium nitrate;

t

TABLE V|
EFFECT OF INCREASED NITROGEN APPLICATION ON DRY MATTER YIELD FROM FIRST CUT FROM PASTURES, SURVEY AREA, APRIL, 10M

EXPERIMENTAL SITE	ryn. nn PASTURE	CONTROL DRV MA I I I II cwi	INCREASE |.er ci-ni	1 CWT ACRE FERTILISER ' DRY MATTER cwi	INCREASE per cent	2 CWT ACRE FERTILISER DRV MATTER cwi	INCREASE per ceni	3 CWT ACRE rFERTILISER DRY MATTER cwi	INCREASE per cent
MADORE	aOLD	0.44		0.67	52.3	2.44	454.6	3.16	1072.7
DRINAGH	OLD U.	14		1 <4	10 71.4	4.35	3130.0	fl.02	3628.6
DRIMOLEAGUE	OLD	4.04		5.27	30.5	12.29	204.2	14.0	226.)
HAWTHORN	NEW	5.R5		14.20	142.7	16.03	174.0	12.7	117.1

Fertiliser used was calcium Ammonium sjilralr (JO s i'crcrnt N)

TABLE VII

EFFECT OF INCREASED NITROGEN APPLICATION ON DRY MATTER YIELD FROM PASTURE OVER THE ENTIRE SEASON, SURVEY AREA, 1961

EXPERIMENTAL SITE	TYPE OF PASTURE	DRY MATTER YIELD. CWT PER ACRE			
		CONTROL	1 CWT ACRE FERTILISER-[1]	2 CWT ACRE FERTILISER	3 CWT ACRE FERTILISER
MADORE	OLD	9.04	10.03	13.19	20.98
DRINAGH	OLD	23.88	21.46	33.19	37.58
DRIMOLEAGUE	OLD	10.96	14.35	26.21	26.14
HAWTHORN	Nil	61.32	65.73	71.82	74.09

fertiliser used was calcium ammonium nitrate,(20.3 percent N)

phosphorus 2 and 4 cwt respectively as superphosphate (or the equivalent as slag); potassium 2 cwt as muriate of potash. The trial was conducted in the same manner as the nitrogen trial. The results obtained over the whole season are shown in Table Till.

The two Drinagh sites had relatively good swards at the .start but the two Drimoleague swards were initially *-very* poor. where nitrogen was applied alone, it increased the output of the very low yielding swards of the Drimoleague sites but had no effect on the Drinagh sites where the control yields were already high.

Responses to phosphate were variable and in general slag gave better results than superphosphate. This can be explained to some extent by the fact that the sites were not limed and under such conditions the increase from superphosphate could not reach its potential. Analyses ofthe herbage showed that herbage from plots receiving no phosphorus had *^exy* low levels of that element, and that herbage from plots dressed with basic slag had a higher concentration of phosphorus than comparable plots dressed with superphosphate. This would indicate that the phosphorus applied as basic slag was more available to the plants.

All site3 showed a good response to potash. Increases from potassium were over 25 percent on all sites, where it was applied in conjunction with nitrogen and phosphorus. This pattern was not evident in similar trials in other parts of the country where the increase from potash was about 7 percent on average. Yet, on some of the West Cork sites where slag was the source of phosphorus increases were even higher although no potash was added. This does not mean that slag is a replacement for potash but rather that its phosphorus-supplying power is better under acid conditions. If potash were added to the slag plots further increases in yield should be obtained.

Results from the same experiment in mean yields of dry matter in cwt per acre are shown in diagrammic form in Figure 3«

The use of moderate amounts of NPK fertilisers can increase the yields of grass by at least 50 percent. Such an increase should allow farmers to carry a much larger number of grazing animals. Care must be taken that the

TABLE VIII

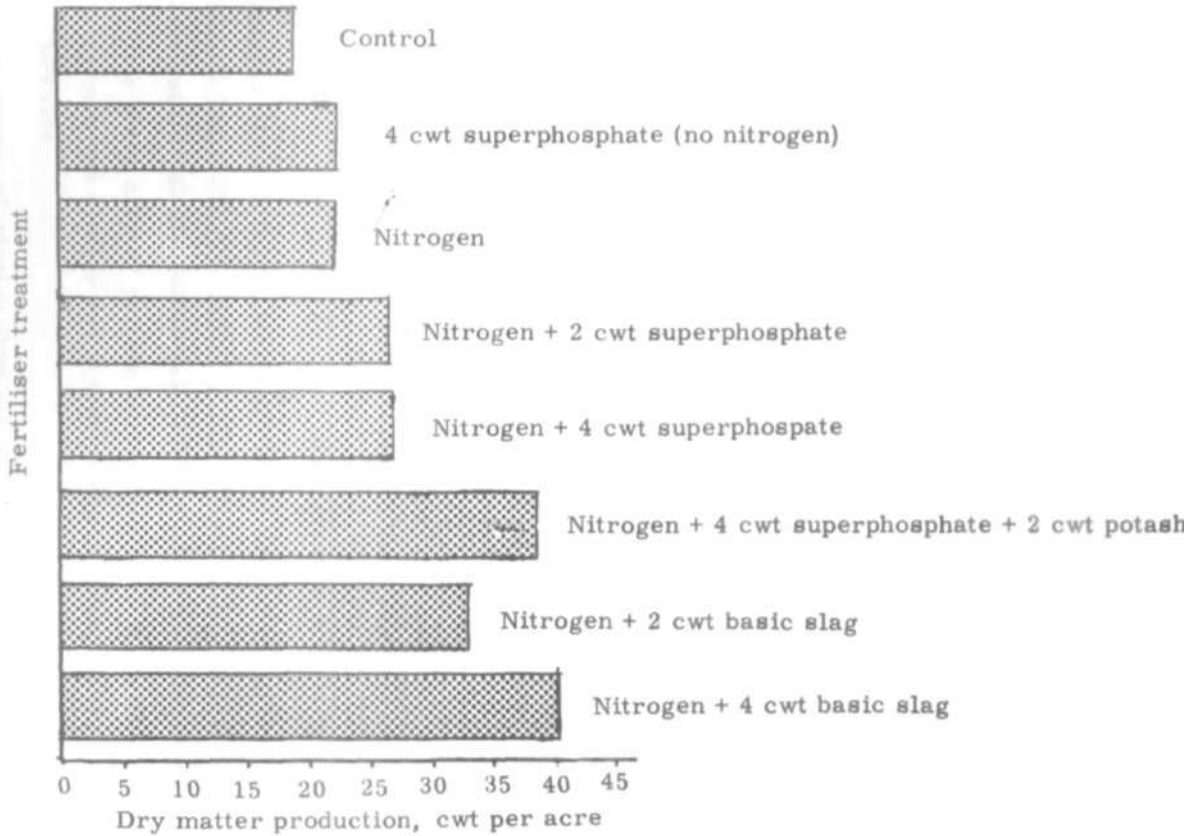
EFFECT OF PHOSPHORUS AND POTASSIUM APPLICATION (WITH AND WITHOUT NITROGEN) ON DRV MATTER VIELD FROM PASTURE, SURVEY AREA, 1961

FERTILISER TREATMENT LBS PER ACRE	DRY MATTER YIELD. JWT PER ACRE			
	DRINAGH SITE 1	DRINAGH SHE 2	DRIMOLEAGUE SITE 1	DRIMOLEAGUE SITE 2
Coocrol	30.2	32.1	7.3	7.6
N (35 lb)	30.0	30.5	13.1	16.7
P (36 lb)	23.3	33.7	21.0	8.8
N (35 lb) P (18 lb) 1	26.5	37.0	18.4	27.2
N (33 lb) P (36 lb) 1	23.3	45.7	13.2	25.4
N (33 1b) P(361b)[1] KU12 lb)	38.1	58.0	20.7	54.5
N(35 Ib)P(lSlb)2	48.6	40.4	17.8	24.5
N (35 lb) P (36 lb)[2]	57.5	47.}	26.3	26.4

1 Phosphorus applied •s superphosphate

2 Phosphorus applied aa basic alag

Fig. 3. Effect of fertilisers on dry matter production from grassland, West Cork survey area



increased output from additional animals, be. greater than the added expenditure on fertilisers.

Mountain gratings

Mountain grazings make up to 18.5 percent of the area examined in the sampl of 120 farms. These areas seem to have a very low production supporting 0.059 cow equivalents per acre according to our estimate i.e. approximately 17 acres per cow. In addition there are large tracts where production is even lower.

These areas are not extensively used for sheep production (except in the Bantry area). Where small areas of such land are included in farms this is understandable as the enterprise would have to be on a small scale and yet would require the same skill, equipment, fencing etc. as a larger sheep enterprise. At the same time much more animal feeding for cows could be obtained from these grazings as they are relatively dry and physically capable of supporting heavy animals. There should not be great difficulty in increasing the carrying capacity of this mountain land to about 3 acres per cow. The annual expenditure should be in the region of £1+ per acre.

It is difficult to understand why larger areas of mountain land are not devoted to sheep. Cobalt levels in the area are low but cobalt deficiency in sheep is easily prevented or cured by using cobalt either as "bullets'* or drenches or by treating the soil with a cobalt salt. Analyses of soil samples taken at random in these mountain grazing areas and reported earlier in the "Soils" section showed that a larger percentage of all samples had values for total cobalt below the clinical level. Perhaps this may be a contributory factor to the low sheep stocks carried.

There is a great potential for sheep production from these pastures. Very much more difficult situations e.g. Glenamoy, Co. Kayo, can be made to support three sheep per acre with proper management and fertiliser use*

PART II CLOVER NODULE BACTERIA SURVEY

Most Irish pastures derire their nitrogen from clover, which oan fix atmospheric nitrogen through its nodule bacteria. Since efficiency of these baoteria for the fixation process oan vary widely a surrey was carried out to assess the position in test Cork.

One hundred and forty-two strains of Rhisoblum trifolii were collected from olovera growing in the Surrey area. The plants were seleoted at random from both old and new pastures and, with the exoeption of two samples oollected at 800 ft and 900 ft respectively, all samples were found below an elevation of 700 ft.

The bacterial strains were tested for nitrogen fixing capacity on red and white clover and both clover species gave a similar response pattern. The response distribution enabled the bacteria to be divided into three groups as follows:

Clover	Response (percent of total samples)		
	Ineffective	Partially effective	Effective
Red	63	20	17
White	5*	22	22

Thus, in the case of the red olover association, almost two thirds of the strains were ineffective while only 17 percent were effective. With white clover, the effectivity pattern was similar but slightly more strains fell into tne higher yielding categories.

The effectiveness of strains from old and new pastures in the Survey area was compared and the results were as follows:

^ - - - - - - - - - - - - ^ » ' < ..».....

		Response (percent of total samples)		
		Ineffective	Partially effective	Effective
Old pasture	red clover	66	20	14
	white clover	66	20	14
New pasture	red clover	36	23	21
	white clover	45	26	29

Old pastures yielded a larger number of ineffective strains with both teat plants. This was particularly the case with white clover where the difference was almost 50 percent. Correspondingly, a greater percentage of strains effective on both clover species were found in new pastures, the difference between pasture types being more marked in the case of white clover.

Two thirds of the samples were collected from elevations below 400 ft. Samples collected above and below this altitude showed little difference in effeotivity patterns. The lower elevation yielded a slightly higher number of samples giving an ineffective response.

These results indicate that the majority of the clover nodule bacteria strains occurring in the Survey area are either ineffective or only partially effective, and that less than 20 percent of the strains can be regarded as fully effective with white and red clover. There is a higher percentage of effective strains in new pastures and a corresponding increase in ineffective strains in old pastures.

PART 111 - GRASSLAND MANAGMENT AND UTILIZATION

Since milk production.is the key enterprise on most West Cork farms, it is obvious that grass, hay and silage are of vital importance. Drinagh Co—Operative (with its various creamery branches) alone receives about 6 million gallons of milk per annum. The peak daily intake is about 36,000 gallons in mid-June, falling to about 3,500 gallons in mid-January. It follows that the 2,000 milk suppliers (all shareholders), are interested mainly in summer milk production from grass. Undoubtedly the same situation holds for the suppliers to the West Cork (Dairy Disposals) Creameries and the Lissavaird Co-Operative Creameries which also operate widely in the area.

The distribution of calving dates of the 1,231 cows lactating in ^^*60* on the 120 farms in the Drinagh Co-Operative survey group is shown in Table II.

TABLE 11: Calving dates of lactating cows, 1960.

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Cows calved	56"	269	382	303	129	60	17	3	3	-	6	3

It will be noted that nearly 90 percent of the cows calved in the February-May period, which emphasises the need for adequate winter feed in the area.

Output of pastures

The production aspects of grassland output are discussed in the "Grassland Production" section. Data collected on the farms selected in the various creamery areas indicate the low level of grassland production per acre. Figures for output in starch equivalents (S.E.) per acre of arable grassland and of total grassland (includes mountain and bog grazings) are given in Table 1 in the section "Grassland Production". The low levels of output are further borne out in Table I which presents average figures far farm size and for output per acre of arable grassland, output per acre of farm and yield per cow in lb. of butter fat *(&/¥)* in the different districts of the Drinagh Co^-Operative

TABLE X; Average farm size and output per aore and per oow (lb, Butterfat) for 120 farms in the Drinagh Co-Operative Group.

Creamery Area	Average Farm Site (acres)	B/T per aore of farm (ID.)	B/P per aore of arable grassland (lb.)	*B/F* per oow (lb.)
Colomane	67.4	17.9	33.0	134.4
Dunmanway	60.3	29.5	47.0	148.5
Caatlehaven	56.9	32.1	50.6	173.8
Adrigole	55.0	34.0	60.2	164.3
Kealklll	64.3	30.6	45.2	152.3
Derrygrea	46.6	30.6	49.2	160.5
Drinagh	86.5	22.8	45.6	165.5
Caatledonovan	48.4	24.9	44.3	140.4
Lowertown	51.1	25.8	60.0	154.9
Durrus	55.8	22.1	30.9	142.2
Hawthorn	67.8	32.1	54.9	174.0
Mealagh	59.4	24.0	29.3	144.5
Average of Total Area	60.0	27.0	44.7	155.6

Creameries. Thin table is abstracted from Table "»"»?,

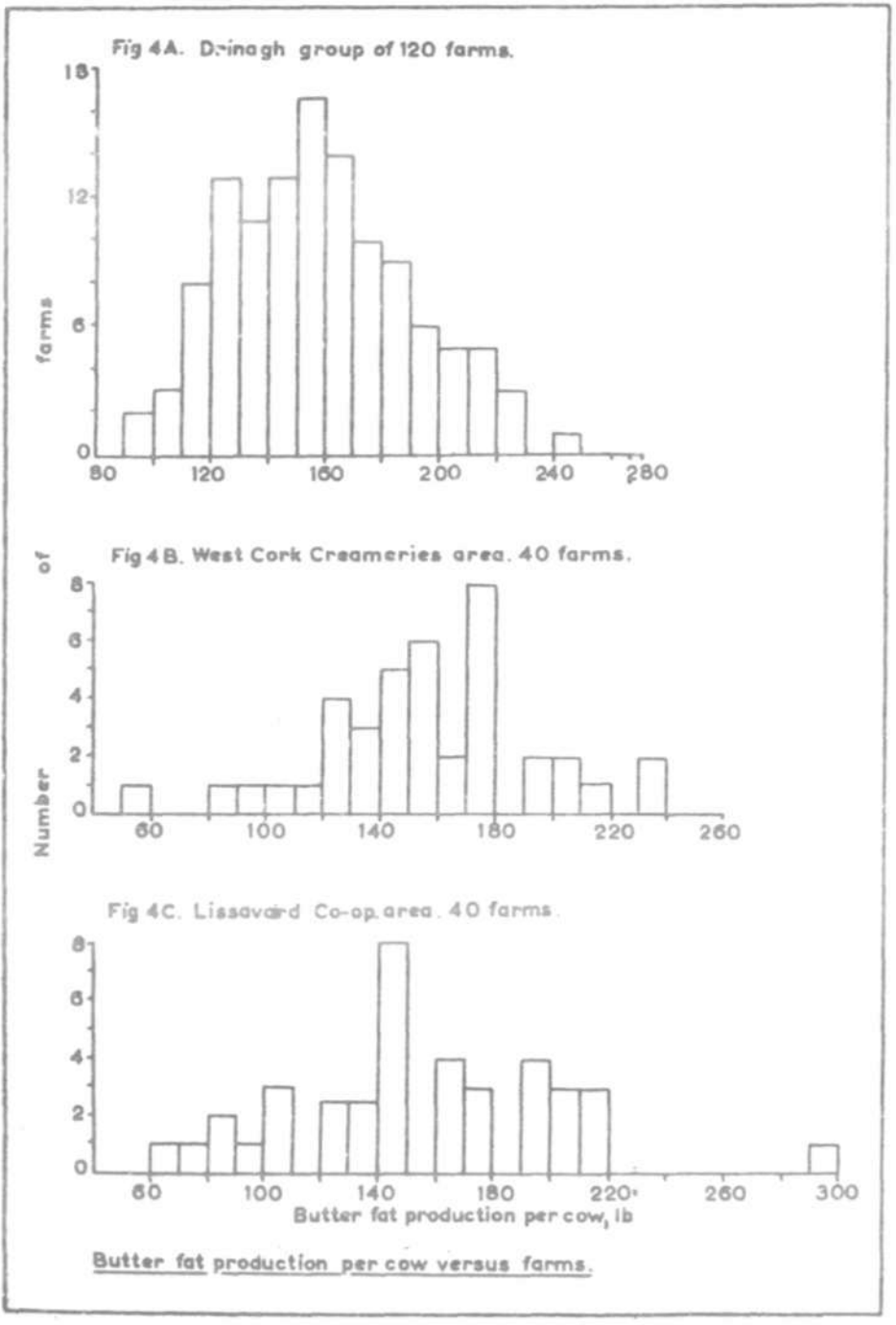
In general output per cow is fairly satisfactory but output per acre is poor. This means that either the stocking rate is inadequate or the grassland management (manuring etc.) is unsatisfactory or possibly both. For comparison, average butterfat production per cow in New Zealand is 285 lb. £^cl average butterfat per acre is 170 lb. versus 156 lb. and *1+5* lb. respectively for the survey farms.

The distribution of butterfat yields per cow in relation to the number of farms in the sample for the different districts of each of the Co-Operative Creameries viz. Drinagh, West Cork Dairy Disposals Co. and Lissavaird is shown in Figure 4. The distribution seems to be normal and the variation small. Butterfat yields between 115 and 185 lb. per cow were given by 72.5 percent of the herds in the Drinagh Croup. This shows that the type of cow in the area is relatively uniform in terms of yield. On many of these farms the amount of foods other than grass which can be grown is limited due to the' fact, that about 25 percent of all land is mountain and bog, while only 13 percent is tilled. Since about 98 percent of the 120 farmers in the Drinagh group kept pigs, it i3 obvious that the small amount of tilled land must supply barley and roots for pigs and cows, and some potatoes.

The quantity and quality of conserved surplus summer grass, available for winter and early spring feeding will be of great importance to these farmers as this conserved grass forms the main feed for the pregnant cows.

It was decided, due to the importance of winter feed, to investigate the feed situation on thrf 120 farms of the Drinagh group chosen for general survey in the area.

From the data presented in Tables 111 andVIll it would appear that about 0.36 acres of hay per cow equivalent is allowed andihat the mean yield of hay from new pastures i3 approximately 30 cwt. per acre. Less than five percent of the survey farmers made silage.



Butter fat production per cow versus farms.

Hay Quality

Prom the 120 farms surveyed in the Drinagh group 217 samples were analysed at Johnstown Castle for phosphorus, potassium and crude protein (N x 6.25) content. Tables XI, 111 and *Till* show the number of samples occurring at the various crude protein, phosphorus and potassium levels.

Crude Protein

Crude protein content was low. Of 217 samples analysed, 1V5 (67 percent) had a protein content less than 10 percent. Prom analysis of the data obtained, it appears that fertiliser treatment and stage of growth at cutting (maturity) had the greatest influence on crude protein content.

Phosphorus

Only 19 percent of the samples analysed had a phosphorus content of more than 0.3 percent. There was a considerable variation between the districts, thus in Castlehaven, only 12 percent of the samples had a phosphorus content less than 0.23 percent, while in Hawthorn the figure was 69 percent of hays sampled.

The relationship between phosphatic fertiliser application and phosphorus content of hay is not clear. In some districts phosphorus contents seemed to be determined by the amount of fertiliser applied, but this relationship did not hold in all cases. For instance, the percentages of total samples for Colomane and Hawthorn having phosphorus content less than 0.23 percent were 63 and 69 percent respectively, although 68 percent of the Hawthorn samples received phosphatic fertiliser whereas only 37 percent of the Colomane samples were so treated. In the Survey districts the data collected showed no appreciable differences in the rates of phosphatic fertiliser applied per acre, in the botanical composition of the hays, or in stage of maturity when cut.

TABLE XI

Crude Protein Contents of Hay Samples from Survey Area
(Numbers of samples occurring at various protein levels)

Location	Crude protein oointent, per cent				Average value for crude protein per oent	Variation in crude protein oontent, per oent
	*10	10 - 12	12 - 14	>1*		
Colomane (19)*	***16***	3	•	*m*	7.94	5.4- 11.9
Hawthorn (16)	10	4	1	1	10.06	6.4 - 15.8
Durrua (18)	14	4	-	-	9.35	6.5 - 11.6
Dunmanway (17)	12	2	3	-	8.81	5.9 - 13.6
Castle haven (17)	12	4	1	-	9.65	4.2 - 11.0
Derrygrea (17)	8	3	2	4	10.56	5.3 - 18.8
Kealkil (23)	15	8	-	-	9.19	5.9 - 11.6
Castledonovan (18)	13	2	3	-	8.38	*5*5* - 13.6
Lowertown (17)	11	6	-	-	3.56	3.1 - 11.5
Mealagh (21)	12	6	3	-	10.25	7.5 - 13.3
Drinagh (15)	9	4	-	2	9.87	*6,6* - 16.6
Adrigole (19)	13	6	—	-	8.60	5.8 - 11.6

•Figures in brackets are the number of samples taken in eaoh district.

TABLE Xll

Hay Phosphorus Levels in Survey Distriots

(Numbers of samples ooourring at various phosphorus levels)

Bistrict	Phosphorus oontent, per oent					Average phosphorus oontent for Survey area, per oent	Per <sent of tota]. samples with less than 0.23 per oent phoa1 phorus
	<0.17	0.17-0.23	0.2-0.23	0.23-0.3	>0.3		
Colomane(l9)*	3	5	4	6	1	0.21	63
Hawthorn (16)	5	3	3	3	2	0.24	69
Durrus (18)	2	1	2	8	5	0.27	28
Dunmanway (17)	2	2	3	9	1	0.22	47
Castlehaven (17)	-	1	1	13	2	0.27	12
Derrygrea (17)	2	1	3	8	3	0.25	29
Kealkil (23)	3	2	1	15	2	0.24	26
Castledonovan (18)	3	3	4.	3	5	0.27	56
Lowertown (17)	1	2	2	8	4	0.25	29
Mealagh (21)	1	4	3	5	8	0.26	38
Drinagh (15)	1	2	1	6	5	0.27	27
Adrigole (19)	2	2	4	7	4	0.24	42
						Average - 0.25	

* Figures in brackets are the number of samples taken in each district

A phosphorus content of more than 0.3 percent* in pasture dry-matter is considered optimum for dairy cows. As already mentioned, nineteen percent of the samples fall into this category, whilst thirty nine percent had a phosphorus content of less than 0.23 per cent, a level which in pasture dry matter supplies barely enough phosphorus for the maintenance of a cow producing 2.5 gallons of milk per day.

Potassium status of hay samples

The district averages varied from 1.19 percent for Colomane to 1.64 percent for Mealagh. Fifty-five percent of the samples analysed had a potassium content less than 1.5 percent. These figures indicate that, in general, potassium levels of hay were not satis-factory. The percentage of samples receiving complete, i.e. NPK fertilization (Table Jill, column 6, figures in brackets) gives a truer picture of fertilizer practice in the area than do the figures referring to "some" fertilizers. It appears from the analysis of the collected data that potassium levels in the hay samples is dependent on whether potassic fertilizers were applied or not. Inclusions of potassic fertilizers in balanced manurial dressings coupled with better management would undoubtedly improve the quality and output of grass-clover swards in the area.

Grass Seed Mixtures and Pasture Management in the Area

Grass seeds were usually undersown with cereals, the typical mixture being ryegrass, cocksfoot, timothy, white clover and, in some cases, red clover. A common practice in most localities was to include the screenings from the hay barn floor with the purchased mixture. Following the cutting of the cereal crop the swards were

0'Moore, L.B. "Mineral composition in relation to animal health and production". Monograph No. 9 'The Production and Use of Grass'. Society of Chemical Industry, 1960.

TABLE XIII

POTASSIUM LEVELS IN HAY FROM THE SURVEY DISTRICTS

(Numbers of samples occurring at various potassium levels)

District	Potassium level, per cent			Average potaaslum level of all samples, per cent	Percentage of aamples from district which received some fertilisers
	> 2.5	1.5 - 2.5	< 1.5		
Colomsne (19)'		3	16	1.19	36 (16)'
Hawthorn (16)		8	7	1.54	81 (69)
Durrus (18)		7	11	1.43	44 (39)
Dunmanway (1 7)		7	10	1.33	65 (47)
Csstlehaven (17)		8	9	1.48	65 (65)
Derrygrea (17)		6	11	1.52	53(47)
Kealkill (23)		11	12	1.48	78 (65)
Caatle Donovan (18)		11	6	1.58	67 (56)
Lowertown (17)		6	11	1.21	41 (41)
Mealagh (21)		13	8	1.64	38 (33)
Drlnagh (15)		9	6	1.57	80 (67)
Adrlgole (19)		6	13	1.36	74 (42)
				Average - 1.44	

" Figures in bracketa are the number of samplea taken in each district

" Figures in bracketa represent percentage of samples from the district which received complete fertilisers, i.e. NPK (nitrogen, phosphorus, potassium).

not grazed until after a crop of hay had been taken. Approximately two thirds of these swards received no fertilisers in their first year. Following one year of such treatment the botanical composition of the swards were typically ryegrass dominant with some cocksfoot, Yorkshire fog and weeds. Timothy and white clover were completely absent. In the second year hay is again taken and the swards are usually grazed up to February. From the data collected it was found that about 1⁄6 percent of the second year swards received a complete fertilizer dressing. The botanical composition of the second year hay swards was Yorkshire fog, sweet vernal, cocksfoot, crested dogstail weeds (plantain) and occasionally some ryegrass.

In the third year the swards were grazed with dairy cows and in most cases no fertilisers were applied. At this stage the swards had deteriorated to Agrostis-dominant swards with a high proportion of weeds especially, p Lantain, silverweed and knapweed. The- clover content of the swards at this stage is practically nil, cocksfoot being the only sown species remaining.

No definite pattern of fertiliser usage on grassland emerged. Some farmers applied a complete fertilizer containing nitrogen, phosphorus and potassium; some basic slag only; some farmyard manure only, and some applied nitrogenous fertilisers only. Many farmers who formerly used sulphate of ammonia on grass now object to it on the basis that "sulphate is bad for the land".

No effort is made to control grazing on most farms, particularly during winter time.

Discussion

The position of grassland in this area can be summarised under a number of headings:

1. Poor pastures, 80 percent of which contain no ryegrass and contain species tolerant to low levels of fertility.
2. Low input of fertilisers.
3. Poor management of newly sown swards.
4. Inadequate quantities of poor quality feed in the form of hay.
5. As a result of the previous four factors a relative **low** stocking rate on a farm basis.

The production of utilised starch equivalent from farms in the west Cork (Drinagh) area is considerably below national average. Less than twenty percent of the grassland contains ryegrass. The amounts of fertilizers used per acre are only approximately one fifth of that required for optimum production. Some meadows and pastures receive sufficient fertiliser and the important need is to extend the fertiliser usage on to more land rather than intensify it on the land already being treated. In the experiments carried out in the area the responses to small inputs of fertiliser resulted in increase in yields in the order of fifty percent after one year's treatment.

In the newly sown swards there is quite large variation between the seeds mixture* used, and the management and fertiliser treatment of most of these swards contributes largely to their deterioration. There is very little clover in most of the swards and consequently the nitrogen supply to the grass is limited to that applied in the artificial form. Only twenty percent of the Rhizobia strains collected are fully effective for nitrogen fixing capacity. The use of inoculation with effective strains of Rhizobium. coupled with the use of lime, fertilisers and good management could help considerably in the development of more productive grass-clover swards.

The quality of the hay fed reflects the low usage of fertilisers and the mature stage of growth of the herbage at cutting. with the use of nitrogen, phosphorus and potassium the yield per acre could be considerably increased. Almost forty percent of the hay samples were unsatisfactory from the point of view of phosphorus content. Again, the use of phosphatic fertilizers would overcome this problem.

There appeared to be practically no hay-saving machinery on farms and this would be a major problem if hay was to be saved properly when cut at a more leafy stage of growth.

Farmers who made silage appeared to have a better appreciation of the value of fertilizers, and cut the swards at a more leafy stage than

those who made hay. Only one of the fanners v:ho made silage did not use fertilisers on his silage swards.

The effect of all the above practices has led to development of very low-grade grasslands which have a mean stocking rate of approximately one cow per three acres. In an area such as ',7est Cork where the climate is relatively mild it should be possible to double the stocking rate if a reasonable level of lime and fertilisers were used, good grass-clover swards sown and a controlled system of grazing management practised (in order to conserve surplus feed for the winter period). In addition, it should be possible to rest the pastures during the winter.

Very few farmers in the area keep sheep. Prom observations made at the time of the Survey, and from discussions with the farmers, the reason why sheep are not kept is because they are too troublesome. In addition, it has been shown that soils deficient in cobalt are widespread in the area, especially in the upland regions. This constitutes a major limiting factor in sheep production in many parts of the country causing general unthriftiness, and in more extreme cases, death. However, as has been shown earlier in this Report, this problem can now be easily remedied. Lack of proper.fencing also is most certainly a cause of difficulty in handling sheep in the area.

LIVESTOCK PRODUCTION IN THE SURVEY AREA

Livestock Husbandry

The main livestock enterprises in the area are dairying and pig production. The bulk of the sheep population in the Survey area is in the Bantry and Castletown districts. The number of the various categories of livestock in the area and in the individual Rural Districts and the relative trends in these numbers from the early years of the present century are presented and discussed in the section on "Economic Aspects of the Survey Area" elsewhere in this Report.

Pig Production

This is an enterprise for which acreage of land is not a limiting factor, and consequently is particularly suitable for the small holdings in the area. The bulk of the pigs produced in the Survey area, however, come not from the vrestern districts and smaller farms but from the Skibbereen and Dunmanway districts. In these two areas pig numbers are on the increase, whereas in the rest of the Survey area the production of pigs is static or declining. In order to obtain some information on the husbandry practices, data were collected from 120 farms in the Survey area. Of these, 106 farmers kept pigs. About 70 percent kept sows and reared the bonhams, the remainder buying in bonhams at 12 - 14 weeks old for fattening. The majority of faiUs did not keep more than three sows.

While first impressions suggested that small litter size wa3 a major problem, a more detailed examination of the Survey returns revealed an average litter size of t1.2 born, 10.4 alive after one week and 10.3 surviving to 8 weeks. These figures are very satisfactory. It would seem from an investigation of litter size in the Dunmanway district that small litters were confined to gilts. As a rule gilts were mated at six months of age, and farmers were inclined to keep pigs, intended f~r breeding, on a very restricted diet from about three months of age. This means that gilts were served at about 180 lb. liveweight and probably at

first oestrus. All available information suggests that this is a sure way of obtaining small litters. With older sows litter size seemed well up to the national average if not better in most oases.

On farms where sows are kept, 53 percent practice creep feeding of bonhams, creep feed being introduced, in most cases, at 3 - 4 weeks. This is hardly early enough in view of the fact that the sow's milk supply falls off at about this stage and, preferably, the bonhams should be accustomed to creep feeding before this age. Introduction of the creep at 10 - 14 days old would improve food consumption and minimise any adverse effects.

Scouring seemed to be a problem in almost half the litters in the Survey. In 70 percent of the cases the litters were less than three weeks old. Treatment for prevention of anaemia is not practised very widely and occasional losses reported at the 3 - 4 week old stage are suggestive of anaemia. Some bonhams observed during the winter months looked anaemic. The problem might be worse but for the fact that sows are allowed out for a few hours daily and return to the sty with a considerable amount of dirt and earth on their udders and legs. Bonhams may get their iron requirements from this source.

The majority of litters are weaned at the conventional eight weeks. However, on about 15 percent of the farms, weaning at six weeks is practised. The Survey also showed that the vast majority of sows are re-mated within the first week after weaning.

Feeding of sows: For feeding the in-pig sow, 43 percent of the farms surveyed bought proprietary pig fattening meal and did not dilute it with home-produced cereals or potatoes, while about 55 percent diluted it with home-grown foods. Only 2 percent fed the sows on farm-mixed ration; purchasing meat-and-bone and grass meal and mixing with bran and home grown cereals.

For feeding suckling sows, 58 percent of the farms fed proprietary meals only. A further 14 percent fed proprietary meals with some bran and home-produced cereals and 28 percent fed a completely farm-mixed ration

Practically all the farms fed 10 - 14 lb. meal per day to each suckling sow, and the great majority fed up to 2 gallons of skim milk. It would seem, therefore, that sow feeding is reasonably satisfactory, especially during the summer months when skim milk is available. During the winter, however, there may be a shortage of protein, especially when the purchased meal is diluted with other foods,,

Feeding of fattening pigs: Very few of ^he farms surveyed used a simple barley/skim milk type of diet for fattening pigs. The majority used a proprietary fattening ration plus skim milk when available, and a good proportion used a mixture of purchased ration with cereals and skim milk. It was impossible to get any clear-cut information on the grading re turns * There was a general tendency to sell fat pigs "on the hoof to dealers rather than to sell direct to a factory for grading. Pigs were never weighed on the farm, and on only 2%percent of the farms were meals weighed before feeding.

Pig Housing: The housing of pigs in general is poor. Cleaning and disinfection of the majority of those examined would be a difficult task and this may be one of the major reasons for the scours mentioned earlier. While iron anaemia may be one reason for the incidence of scouring, the possibility of harmful bacteria build-up in the houses due to poor hygiene cannot be ruled out. It is of interest however, that even with such unsatisfactory housing the mortality rate in bonhams in the area between birth and 8 weeks of age is not unduly high (estimated at between 8 - 10 percent). The pig housing in the area will be discussed in more detail in the section on "Farm Buildings".

In general, most of the problems in pig production are no greater than in any other area of the county. With improved housing the numbers kept could be expanded considerably and the vast bulk of the problems arising could be hanoled by xhe advisory services.

Dairy Cows

In investigation on the dairy herds of the 120 farms selected as a sar-le of the Survey area was carried out. All the farms surveyed were creamery suppliers. The predominant breed in the area is the Shorthorn,

Of a total of 1,256 oowa on the 120 farms surveyed, the distribution of breeds was aa follows:

Shorthorn	81.4 percent
Shorthorn x Frieaien	15.3 percent
Shorthorn x Kerry	1.4 percent
Kerry	0.9 percent
Others	1.0 percent

Herd site: The range of herd sizes and the arerage herd size for each of the creamery districts surveyed are set out in Table 1.

TABLE 1; Herd sizes in Survey area (oows)

Area	Herd Size (range)	Average Herd Size
Drlnagh	5 - 2 3	12.5
Adrigole	8 - 16	10.6
Mealagh	8 - 14	10.3
Kealkill	9 - 2 0	13.4
Castledonovan	5 - 1 5	8.3
Lowertown	5 - 1 4	8.0
Colomane	7 - 1 1	9.0
Hawthorn	8 - 2 0	13.2
Durrua	4 - 16	8.9
Dunmanway	8 - 1 8	12.8
Caatlehaven	8 - 1 2	10.2
Derrygrea	5 - 1 4	9.2
Average herd size (all areas)	-	10.5

Calving datea: The distribution of calving dates in the January to July period are given in Table 11. For comparison, similar data calculated

from figures presented in the Report of the National **Parm Survey for the** Southern legion (1955/57)* are also given in the same table. It is **of**

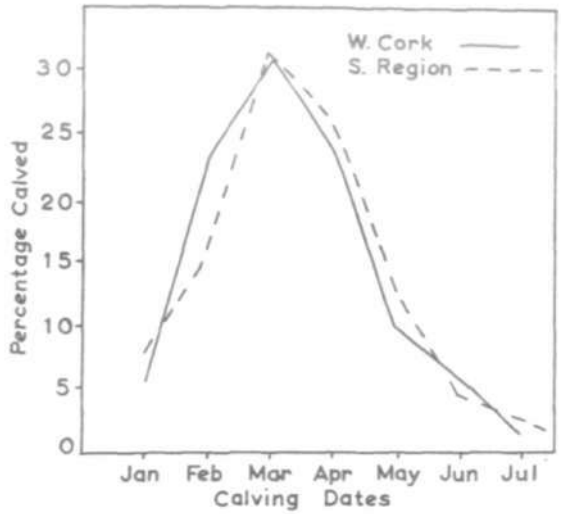
TABLE 11; Percentage distribution of calving dates in Survey area (January-July)

Month	**West Cork, 1960** (percent)	**Southern Region, 1955/57** (percent)
January	4.4	7.6
February	23.2	16.8
March	31.3	31.6
April	24.4	25.8
May	10.4	11.7
June	4.8	4.5
July	1.5	2.0

interest to find.that, in general, calving dates in the 120 farms surveyed are slightly earlier than the average for the southern region as revealed by the National Parm Survey. This may be more clearly seen from a graph of the data (Pig.1). The similarity of the figures would suggest that the 120 farms selected in the West Cork area are a fairly representative sample.

Approximately 59 percent of the calvings occur in the January-March period, with the peak in March. In all but two districts (Lowertown and Castledonovan) 50 percent (or more) of the calvings occur in the first three months of the year. It will be noted from Table 1 that the two areas mentioned have the lowest average herd size. In the Hawthorn area, which has the highest percentage of early (January - March) calvings

National Parm Survey (1955/6 - 1957/8) Pinal Report. Compiled by the Central Statistics Office, August, 1961.



Pig. 1: Distribution of calving dates (Jan.-July) in West Cork (i960) and Southern Region, National Farm Survey, (1955/57).

(69 percent), the average herd size is the second highest in the Survey area. The general trend appears to be that the greater the herd size the higher the percentage of early calvings (as might be expected since herd size probably reflects the food resources on a particular farm). The smaller farms are inclined to delay calvings until grass is available as they probably have insufficient conserved grass (as hay or silage) to supply the early calver. The Kealkill area, however, which was found to have the highest average herd size, is an exception to this general pattern. Percentage calving in the

January-March period was 55 percent, a figure lo«?er than the average for the whole area surveyed.

Herd age: Percentages of cows in various age categories in the Survey area are shown in Table 111.

TABLE 111; Cows in different age groups.

Age, years	Percent of total
2	2.5
3	22.0
4	16.6
5	12.0
6	14.0
7	10.5
8	9.8
9	4.7
10	4.9
10	3.0

Feeding of cows: The pattern of feeding of cows was very similar on all farms. The basic foods consisted of hay and roots (swedes, fodder beet, mangels) with a home mixed concentrate before and after calving. The concentrate consisted of combinations of barley, oats, sugar beet pulp, maize and bran, and very few owners used any balancer meal. Pour of the 120 farmers fed silage, and four fed proprietary pig-fattening meal to oows. In all but six cases, roots were fed in conjunction with hay, while only one farmer fed kale with hay. ill except two fed meals of some kind.

Milking; The survey showed that 78 percent of the farmers milk by hand, 22 percent by machine. Additional data on milking methods have been abstracted from the wider survey on this subject conducted by Mr. M. Cowhig, in 1960, in the Munster area (Table IV). The figures presented are from a total of 53 herd owners with 8 or more cows. It will

TABLE IV

MILKING PRACTICES IN HERDS IN THE SURVEY AREA

Herd size	8	8 - 14		15 - 29		
Milking method	Hand	Hand	Machine	Hand	Machine	Total Herds
Number of herds	6	30	8	2	7	53
UDDERS WASHED BEFORE MILKING						
Always	0	2	6	0		13
Sometimes	5	17	2	2		2->
NeTer	1	11	0	0		13
METHOD OF WASHING UDDERS						
Water	5	19	3	2		32
Chemical solatioa	0	0	5	0		8
DAILY WASHING AND CLEANING OF MILKING EQUIPMENT						
Hot water	4	18	1	1		26
Chemical la cold water	0	2	6	0		13
Cold water	2	10	I	1		14
Herda using two milking units			8			13
Herds using three milking nnits			0			2
METHOD OF STRIPPING						
Hsnd			3			4
Machine			5			9
Hand and Machine			0			2
MACHINE IDLEi						
7 - 12 weeks			1			
13 • 18 weeks			1			
If. - 24 weeks			6			

be noted that in herds of 8 to 12 cows, 8 out of 38 (21 percent) used machine milking, about the sane proportion as revealed by the 120 farm survey.

Milk was not cooled on any of the farms surveyed. Although there were only 15 machine-milking herds in the 53 farms covered, seven makes of machine were represented. Only three herd owners recorded milk yields. The number of milkers per herd varied from one to four. The average for hand and machine milked herds was 2.4 and 1.2 respectively. The average manber of cows milked per milker on the day prior to collection of information, was four in hand-milked, and ten in machine-milked herds, respectively.

More than half the herds were milked in single-line cowsheds, and milking parlours were not used on any farm. It will be noted that 75 percent of the machines in herds of 8 - 14 cows are idle for long periods (19-24 weeks) in the year (Table IV).

Sheep-

The biggest concentration of sheep in the Survey area is in the Bantry and Castletown districts. The Blackface Mountain is by far the most common breed kept. On some farms where there is a reasonable amount of non-mountain land some Halfbreds (Border Leicester x Cheviot) and Border Leicester x Suffolk are kept. In the main sheep areas, however, the breed appears to be exclusively Blackface Mountain, and on farms where lowland breeds or croasbreda might be kept the tendency is to keep cows rather than sheep. It was found extremely difficult to obtain any idea of the performance of the sheep flocks. No data on lambing could be obtained and estimates varied between 60-80 percent for the Blackface breed.

As regards flock size, again it was found difficult to get a true picture. It seems to range from about 20 or 25 to as high as 700 to 800. The average flock size is around 60-70. One of the big difficulties in getting accurate information on such things as rate of stocking is the existence of commonage. No effort is made to improve this type of land

and it was impossible to find out what number of sheep ary particular farmer was entitled to graze on this commonage.

Income from sheep is derived mainly from wool. Average fleece weight is in the region of 5 lb. per ewe. Prices realised for wool range from 3/3 to 3/6 per lb. It is quite common to keep wethers on the mountain for 2 to 3 years or more. If they are in good condition then they realise £3 to £3. 10. each. It seems that the greatest outlet for these sheep is to Korthern Ireland, and trucks from Northern Ireland travel regularly to the area.' Lambs may be sold locally for as little as 30/- each; but in general it seems that local butchers buy most of their mutton requirements in Bandon and Limerick.

Fencing is a problem on many of the farms although some are availing themselves of the fencing grant which i3 now available. It is unlikely that there will be any kind of general agreement on the fencing of commonage. Until this can be done it does not seem likely that any farmer using this commonage will try to improve it by fertiliser use and better management nor can he be expected to do so under the circumstances prevailing.

On the 120 creamery farms which were surveyed the numbers of sheep were small, and only 13 percent of these farms kept sheep. Numbers on the farms ranged from as low as 1 2 up to 56. More than half of these kept Blackface Mountain, a few Halfbreds and the remainder had a few Border Leicester or Suffolk, or crosses of these two breeds. As the farmers referred to here are all creamery suppliers the cow is more important than the sheep and the latter constitutes only a very minor proportion of the farming enterprise.

There does not appear to be any desire on the part of farmers with some lowland in addition to mountain land to produce G-reyf ace ewes by crossing the Blackface with a Border Leicester ram. Local opinion is that the Border Leicester is not hardy enough for the conditions encountered in the winter and as already stated, the tendency seems to be for cows to oust sheep from the lowland or foothill farms. The

general position as far as sheep are concerned therefore would seem to be that although output is low the costs of production are also very low - sheep grazing is not fertilised and no supplementary feeding is practised.

Peeding3tuff3: The largest co-operative in the area buys about £60,COO worth of barley from outside the Survey area each year. It is estimated that other concerns in the area would, between them, buy at least an equivalent amount. It would seem that increased barley growing within the area should be encouraged (as far as soil and other conditions permit),

Details of the production of compound feeding stuffs by manufacturers in West Cork area have been kindly made available by the Feeding Stuffs Section of the Department of Agriculture, and are set out in Table V.

TABLE V: Production of compound feedingstuffs in the Survey area (i960)

Type	Quantity (tons)
Pig creep feed	103
Sow and Weaner meal	1,011
Pig fattening meal	9,329
Other pig rations	207
Calf meal	308
Dairy meal	21
Poultry meals (all types)	296
Total	11,275

Some manufacturers may sell part of their produce outside the area, but against this, firms located outside the.Survey area sell feedstuffs within the area. No figures are readily available for sales of uncompounc[1] ed feedingstuffs such as bran, pollard, maize meal etc., in the area. Pig meals constitute by far the largest proportion of the compound feeds manufactured in the area. Of a total of 11,275 tons, 10,650 tons go to pig feeding (or are sold for this purpose). It has been noted that some farmers feed pig meal to cows and calves also. Compounders in the Duzmanway and Skibbereen districts, the main pig

producing districts of West Cork, produced between them almost 9,000 tons of pig compounds in 1°60»

The material presented in this report has been compiled from (a) the 120 farm survey; (b) data made available from the Department of Agriculture re feedstuffs and farm buildings; (c) extracts from a more general survey conducted by Mr. 11. Cowhig on milking methods and (e) general observations made by Mr. J. 0*Grady ar.d the author during visits to the area. The co-operation of the Department of Agriculture, Creamery Managers and local Agricultural Instructors in providing background information is greatly appreciated.

Economic Aspects of Pig Production in the Survey Area

The density of pigs has always been high in Co. Cork. In the last three decades this density has increased from 130 to 172 pigs per 1,000 acres in the county which is more than double the national average.

To investigate the economics of pig production in the Survey area a study has been made of the pig enterprise on a sample of 30 farms in the area. Of these, 8 bred weaners, 13 fattened purchased weaner3,while *3* combined both enterprises. Only 4 herds obtained more than three quarters of their income from producing bonhams, and the emphasis generally was on fattening. Sixteen herds had receipts of less than £500 p.a. and a further *9* had revenue of less than £1,250 p.a. The fattening of weaners on a small soale was a particular feature of the area although the great majority of the breeding herds were alsc small. Seven of the eight breeding herds in the Survey were small scale enterprises.

The average margin earned per £100 Gross Output was £19. 6. 0. The range was from a loss of £4. 18. 0. to a margin of £14-6.12. 0. The distribution on the 30 farms survey was as set out:

Loss		on	3 farms
0 - £20	margin	on	12 farms
£20-£40	margin	on	14 farms
£40 (and over)	margin	on	1 farm

On average, breeding herds earned a margin of £26.15. 0. per £100 production, while fattening herds had a margin of £16.12. 0. Enterprises combining both systems came in between, with margins averaging £22. 6. 0. These margins were partly the result of the use of old buildings with low depreciation charges, and the feeding of some farm by-products. Without these advantages the estimated margin would have been £12. 10. 0. on average, and for small herds £7. 16. 0., per £100 Gross Output.

An analysis of the Net Margins earned showed that fixed costs were high in West Cork at 35 percent of the Gross Margin. In small herds they were

as nigh as 47,5 percent, and for breeding herds they also exceeded 40 percent.

A breakdown of costs showed the following distribution of expenses per £100 gross output:

Peed	£69. 12. 0.
Labour	7* 14. 0.
Other	3. 8. 0,
Total	£80. 14. 0.

It will be noted that feed accounted for over six-sevenths (86.2 percent) of all expenses. On twelve of the thirteen fattening farms the conversion rate averaged 3.97 with a range from 3.65 to 4.43 lb. of feed per lb. live weight gain. Peed costs averaged 28/10 per cwt. of barley equivalent so that the cost of feed per lb. live weight gain was 12.3d. Pigmeat was sold for an average 19.7d.

Of all the feed used, 78 percent was purchased, the average purchase price being 29/9 per cwt so that the average cost of all feed was just under 27/6 a cwt.

The ration was made up of:-

45.5 percent purchased compounds	4-1 »6 percent cereals
2.5 percent high protein feeds .	0.7 percent roots and greens
8.7 percent milk	1.0 percent swill

Compounds were competitively priced in the area but straight feeds such as meat and bone meal, corn offals and maize meal were generally dearer than in other areas in the county which have been studied. Small enterprises paid 1/4 per cwt. more than larger for pig fattening ration, and for other feeds there was similar differences.

Over 40 percent of the houses used were old houses with little or no depreciation charges. Nevertheless farmers made very good use of fattening accommodation. Generally herds had a throughput of 2.8 pigs per pig space per annum but fattening herds had a lower throughput at 2.7 pigs. Parrowing space was used by 2.5 litters, which was similar to that found in the pig

enterprise survey in other areas.

Of over 2,000 pigs sold fat only 766 were sold directly to the factory. Receipts per pig from sales on the farm averaged approximately £14.13.0. while the factories paid £15. 1« 0. This method of sale on the farm has been comnon in West Cork for at least two centuries. Factories in Cork paid marginally more per cwt. dead weight than did the dealers, but the distance to factories, convenience and tradition predisposed farmers to sell on the farm.

Bonhams also made good prices; altogether 1,622 bonhams weighing 70 lb. each were purchased by the fattening units for an average price of £6. 5» 0. each (i.e. 2l.4d. per lb). Breeders sold 379 weaners aged 82 days for an average of £5.15. 6» each. These prices were considerably better than those reported from other parts of the country. Although weaner prices were good and the fecundity of the breeding herd in terms of litter size and re-production cycle was better than in other areas studied the emphasis was on the fattening of weaners. There would seem to be good economic opportunities for the production of bonhams in this area and this enterprise would be more profitable on some of the farms than fattening purchased pigs.

ANIMAL DISEASE AND MORTALITY

The losses to agriculture through animal disease can be divided into two broad categories, firstly those that cause or result in the death of the animal and secondly those that cause ill-thrift or pining. The first of these categories has been surveyed, by the collection of data procured from the two knackeries which serve the Survey area. By this means figures for the losses through death from disease or fatal accident for the years 1960 and 1961 have been compiled. These are given in Table 1 and would cover most of the animal deaths.

While similar figures for the country as a whole are not available, it would seem that losses within the area are not abnormally high. Losses in cattle in the Survey area were greater in i960 than in 1961. This reflects the heavy losses in cattle throughout the country in the first half of 1960. Losses in the horse population increased in the months December, ^^60 to March, 196*1, but no explantion can be offered for this trend.

Losses due to animal ill-thrift are much more difficult to assess, and in the absence of any locally based veterinary investigation laboratory only an estimate can be offered. Visits have been paid on several occasions to veterinary surgeons in all parts of the Survey area, and from information they have given the following observations are made. In cattle, conditions such as milk fever and acetonaemia are frequently encountered; liver fluke as a clinical condition ia well recognised. Mortality in young calves is low. In weanling pigs scouring and oedema-like conditions are common, and are usually associated with changes in environment or feedings In younger pigs scouring, which may result either from anaemia or bacterial action, is encountered* Disease in pigs generally does not appear to be a major problem. This view is supported by the figures collected in farm survey which are given in the Livestock Husbandry section.

TABLE I

CARCASES COLLECTED 331 THE SURVEY AREA, (JANUARY i960 - DSCEIIBER 1?6l)

1960	*GoxJi*	Bull5	Heifers	Bullocks	Calvea	Horses	Donkey*	Shoop	Pifja	Coats	Unspecified	TOTAL
January	13	-	4	-	-	2	2	1	1	-	6	29
Pobruory	16	1	4	9	2	2	1	5	5	-	5	50
Uaroh	35	2	14	7	3	8	2	4	6	-	5	86
April	19	3	13	10	5	1	-	3	1	2	21	78
Hay	23	3	10	11	10	3	1	1	8	-	38	108
June	15	-	11	12	8	6	-	-	10	2	24	88
July	23	1	14	10	3	5	-	-	9	3	5	73
August	22	1	13	3	5	6	2	2	7	1	4	66
September	33	1	9	4	1	1	-	4	5	2	3	63
October	13	r	5	4	1	3	1	1	2	1	10	41
November	15	-	3	5	1	4	1	2	6	-	1	38
Deoetfber	10	-	4	3	4	12	3	4	1	3	4	48
1961												
January	23	1	8	3	2	11	3	1	6	-	1	59
February	11	-	6	4	3	11	2	1	8	2	2	*50*
March	20	1	4	5	8	11	2	8	14	-	-	73
April	28	-	6	3	6	4	-	4	9	-	6	66
May	19	2	6	7	14	8	2	2	7	-	2	69
June	7	1	8	4	2	5	-	1	9	-	9	46
July	9	1	7	2	1	5	1	3	16	2	4	51
August	12	-	6	6	6	6	1	3	8	-	10	*58*
September	11	-	4	-	10	3	-	2	9	-	12	51
October	13	-	12	3	6	3	3	-	10	-	15	65
Novoraber	9	-	5	2	11	3	1	-	9	7	12	59
Dooeiaber	7	-	3	1	6	5	•	**	8	1	7	38

In general it would appear that losses in farm stock in the area due to ill-health may be less than in the country as a whole.

Cobalt deficiency as a limiting factor in sheep production would be expected in parts of the Survey area where geological formations and related soils are conducive to this condition. Low cobalt status has been reoorded by Walsh et al* for a number of soils within the area and more extensive sampling and analysis of soils during the Survey has revealed the frequent occurrence of cobalt levels below those required for proper nutrition of sheep and cattle. Deficiency levels are most comnon in the hill grazing areas. This feature has been discussed more fully in the section on "Soils of the Survey area" in this Report.

* ' Walsh, T., Fleming, C.A., Kavanagh, T.J. and Ryan, P. Cobalt status of Irish soils and pasture in relation to pining in sheep and cattle. Journal Department of Agriculture, Vol.52. 1956.

FARM BUILDINGS

A limited investigation of farm buildings in the Survey area indicated that the main problem is essentially that of erecting new buildings rather than of adapting existing structures. A large number of older buildings in the area have trails constructed of local sandstone which, because of its laminated structure and ease of cleavage is not suitable for dressing into the required shapes for good masonry work. In addition, this stone has poor weathering properties, and damage by frost, water penetration and disintegration was common. The rough surfaces made weather-proofing difficult, and the stratifications showed obvious paths of water movement. The disinfection of such walls presents an almost impossible task. These defects, together with the thickness of the masonry and the small openings for doors and windows makes any form of reconversion difficult and expensive.

Owners of such farm buildings *nere* generally in favour of effecting an improvement but did not consider themselves sufficiently skilled to undertake the work. The almost complete absence of local skilled labour was repeatedly given as the reason for the absence of better buildings, and it appears that this is a major factor inhibiting e more widespread erection of new work.

The numbers and types of buildings erected in the Survey area under the Farm Buildings Scheme since that Scheme was initiated in I9*f9 have been kindly supplied by the Department of Agriculture, and are set out in Table 1.

TABLE 1: Buildings erected in Survey area to date under Farm Buildings Scheme of the Department of Agriculture.

Type	Quantity
Cow-byres	909
Stables	123
Poultry houses	200
Piggeries	369
Livestock houses	387
Grain lofts	257
Hay barns	681
Agricultural produce houses	1,036
Machinery houses	301

Prom the figures presented in Table 1 it is apparent that more attention was paid to the erection of new buildings for some purposes than for others. The relatively small number of new piggeries erected under the grant scheme is worthy of comment considering the importance of this farm enterprise. An examination of the distribution of these new buildings revealed that it was the owners of larger farm3 rather than those of the smaller farms that mainly availed of grants for building purposes, principally because of the latter*s lack of necessary capital.

The shortage of capital was also apparent in the poor standard of construction in other farm buildings in the area where little provision was made in layout in terms of labour saving amenities.

Because of lack of proper storage buildings homegrown cereals are sold off and feeding stuffs have to be repurchased. On some of the farms also the absence of suitable buildings necessitated the selling of young stock when they might more profitably have been retained, and the producers are faced with the added problem of replacing reactors under the Bovine Eradication Scheme. Many new byres were unsatisfactory in finish, and the absence of glazed windows to the opes was notable. Temporary screens of sacking or boards were sometimes used. In some cases these were not removed in warmer weather and created problems in ventilation.

Most farms are in need of better approach roads and properly surfaced yards.

Pig Housing

A survey of pig housing was carried out on 30 farms in the Survey area. Most houses proved to be conversions from loose boxes, stables or old dwellings with little or no modification of the original structures. Warmth was generally provided by building straw-covered kennels within the houses and by the use of straw on the floors. The walls were of sandstone, sometime up to 3 feet in thickness, and while these houses probably could ensure sufficient warmth for the pigs, conditions generally were poor. Ventilation was not controlled and facilities for drainage and dung removal were inadequat Feeding arrangements generally took the form of circular metal troughs places in the centre of the pens and there was no supply of piped water. Surfaces were usually unhygienic.

New houses generally included covered sleeping areas with open yards for dunging and feeding. Walls were concrete, and roofs were usually of corrugated steel. Insulation was not normally incorporated and the conditions in winter must, therefore, be very cold. Some farmers had abandoned the use of the yards except for feeding, and others had roofed over the yards providing more accommodation for pigs.

On most of the farms surveyed the owners had a good appreciation of the fundamental principles of good housing but lacked the skill to put these into effect. While they desired to increase the standards of their housing the absence of capital and/or skilled labour made improvement difficult, particularly for the smaller producer.

STATE FORESTRY IK THE SURVEY AREA

In recent years there has been a considerable expansion of State Porestiy in West Cork and the area of productive land held there by the Porestiy Division has increased from 2,300 acres in 1951 to 14,000 acres at the end of 1960-*61. There are five State forests in the area: Dunmanway, Clengarriff, Inchigeelagh, Macroom and Ross Carbery Centres. At the end of the 1960-*61 planting season the total area planted at the West Cork forests (including soma acquired woodland remaining intact) was 10,063 acres (with a reserve of 3,929 acres available for planting). It is proposed to plant 1,247 acres in the *A36'\-%62* season*

Acquisition and planting figures for the past six years for the West Cork area are shown in Table 1. There is every likelihood that State Porestry development will continue to expand as there is still a substantial pool of potential forestry land in the area and acquisition prospects in general are promising.

TABLE 1: Forestry areas acquired and planted in West Cork, 1955-'62.

Season	Productive area acquired, acres	Area planted, acres
1955-6	1,549	336
1956-7	1,533	674
1957-8	1,912	967
1958-9	1,211	1,382
1959-60	1,031	1,402
1960-1	1,319	1,562
1961-2	-	(proposed) 1,247

At present 13,610 acres of land are on offer to the Porestry Division in West Cork and the state of negotiation reached is shown in Table 11.

TABLE 11: Status of land acquisition,. West Cork.

Present state of acquisition	Number of cases	Area, acres
Agreement to purchase reached with owners and title being cleared	52	2,419
Negotiations to purchase in progress with owners	47	2,513
Offers at preliminary stages of investigation	126	8,678
Total	225	13,610

Acquisition prospects, however, vary considerably in different parts of the area. In the south coastal districts, Clonakilty, Skibbereen and Baltimore, the Forestry Division might expect to acquire only small blocks of woodland and cut-over woodland. These are usually small areas surrounded by good lands but have the merit of being first-class forestry sites.

North of the coastal areas, in the hills between the Dunmanway-Drimoleague-Bantry and the Macroom-Ballingeary-Bantry roads, prospects of acquiring larger quantities of land are good. In this area the site types are medium quality (for forestry). However, rock outcrop is common, and creates problems in developing the land for forestry.

Around Ballydehob, and northwards through Durrus to Bantry, forestry prospects are good, and land offered has generally been of good quality for forestry. Little useful land is likely to be acquired on the Sheeps Head Peninsula.

Around (rlengarriff expansion will probably be slow. Between Glengarriff and Castletownbere prospects are limited, but south of Castletownbere there is some scope for expansion. In this area the extent of rock outcrop, however, will pose some problems.

In the Inchigeelagh-Ballyvourney area, and eastwards between Macroom and the Boggeragh Mountains acquisition prospects are good, and site types offered have been of medium quality, though rock outcrops occur. To the east of the area there is less outcrop and site types are better.

Employment; Direct employment on State forestry work in West Cork has increased considerably in recent years and at present 205 men are employed, with an annual wages bill of about £75,000. As more land is acquired and planted, and as existing plantations reach the productive stage, the level of forestry employment will increase. A large-scale forest tree nursery of 50 acres has been established near Macroom and when in full production will give considerable employment.

Age of plantations in West Cork; All plantations in the area are less than 30 years of age (the first being established in the early 1930*s). The age structure of the plantations is approximately as follows:

Age, years	Extent, acres
1 - 20	7,511
11-20	809
21 and over	1,383
Total area	9,703

It should be noted that these figures do not include 3&3 acres of old acquired woodland still held intact.

Species used in planting; In West Cork soil and climatic conditions favour certain species, e.g. Sitka spruce, Pinus contorta. Japanese larch, and Abies nobilis. Other species are of course also planted in the area. In a recent year in the State afforestation programme for the country in general the percentages of the various species planted have been as follows:

Species planted	Percent of total
Sitka spruce	44.1
Pinus contorta	30.9
Norway spruce	10.1
Scots pine	3.3
Japanese larch	1.6
Other conifers	6,8
Broadleaves	3.2
Total	100.0

The percentages for the West Cork area would not differ appreciably from the national figures.

FISHERY RESOURCES IN THE SURVEY AREA

Sea Fisheries

The sea fishing industry has always occupied a position of some importance in West Cork although over the years the pattern of fish landings has changed considtrably. In 1925, for example, the total value of fish landed in the ore*, was approximately £55*000, of which £30,000 was realised on mackerel, £6,500 on herring, £4,500 on white fish and £14,000 on shellfish. In i960, the landings at ports in the area were worth about £250,000, with white fish predominating at £158,000, followed by shellfish (£45,000), mackerel (£38,500), and herring (£5,500).

The numbers of men solely or partially engaged in fishing in the same two years were:

	1925	1960
Solely engaged	68	175
Partially engaged	1,662	350

In the period up to 1930 landings, as in 1925, were chiefly mackerel taken seasonally by row boats and cured extensively for export. In 1925 approximately 20,000 barrels of pickled mackerel, valued at around £60,000, were exported almost entirely to the U.S.A. Production of cured mackerel declined sharply in the early thirties because of developments in the United States, viz. (1) the greatly increased landings of mackerel by the American fishing fleet; (2) the production in the U.S.A. of salted herring fillets which almost ousted the ordinary pickled mackerel from the market, and (3) the imposition of a high protective tariff on imports of pickled mackerel. As a result, the pickled mackrel trade died and with it the main fishing activity in West Cork at that time.

The Sea Fisheries Association, which was set up in 1930, and its successor, An Bord Iascaigh Mhara, established in 1952, have been actively

endeavouring to encourage a revival of fishing in the area. Emphasis has been placed on white fish, and landings (as indicated) have shown promising results. The outlet for mackerel has up to recently been confined to a limited fresh market, with small openings for processing. Lately, however, thei^e have been indications that there may be a market in developing countries for mackerel cured in the traditional West Cork manner, and marketing prospects are being closely investigated.

At present, An Bord Iascaigh Mhara have 17 boats on hire purchase in West Cork, as follows:

Port	Total of boats on hire purchase	Type (length in feet)			
		Under 35	35-49	50	56 or over
Union Hall	5	-	2	2	1
Baltimore	6		2	-	3	1
Schull	4			1	1	2
Castletownbere	2	-		-	1	1

The present cash price of fishing boats vdth an initial complement of gear is approximately: 26 feet £1,0C0, 32 feet £3,000, 38 feet £7,000, 45 feet £10,000, 50 feet £12,500, and 56 feet £17,500. Boats *of 55* feet and under are used mainly in fishing for shellfish for which there is a very keen demand. Markets for lobsters and crayfish, of which there is a considerable landing in West Cork, are particularly buoyant. In recent years State grants have been available for new fishing boats issued by the 3oard on hire-purchase or otherwise and interest charged is held at 4 percent by means of a further State subsidy.

It is, unfortunately, the experience of the Board that suitable applicants for fishing boats are not forthcoming in West Cork. The Board have a boat-building yard at Baltimore (where there is also a privately owned yard). Both of these cor.oerns are affected by poor demand for boats. The Board have provided 1'icr handling and juick freezing premises at Schull which, for the want of re." material, has beer, idle for almost the entire period. An ice plant at Schull and another at Castletownbere have also

been operating at a loss because of inadequate demand for ice.

Fisheries Division of the Department of Lands in 1958 initiated a scheme for training fishermen as skippers, and in 1959 for training boys as fishermen. Generous allowances are payable to participants under both schemes. The response to both schemes from West Cork has been disappointing. The only trainee from the area under the skippers scheme qualified for a certificate of competency and is now second in charge of the Department's exploratory fishing vessel "Cu Feasa." Only six boys applied for participation in the training scheme and of these five persevered with training.

There should be tremendous potential for further development of fishing in West Cork. That the Government believe this to be so is borne out by the choice of Castletownbere for development as a major fishery harbour at an initial cost of some £200, COO. All available evidence points to the fishing grounds in the vicinity of West Cork being prolific. The markets are available. What are missing are men fully qualified to take the boats to catch the fish, and the investment of capital and business acumen to cater for the processing and marketing of the catch.

Inland Fisheries

The Cork rivers entering the sea west of Ross Carbery are small spate rivers which hold salmon and sea trout. When water conditions are right salmon and sea trout provide sport for anglers, mainly in June and July. In addition, the estuaries of rivers such as the lien, Ouvane, Snave and Adrigole support commercial net fisheries, which provide employment for a **few** months each year for about 75 men. Income in the area from salmon angling and commercial fishing for salmon is probably of the order of £10 - 12,000 a year.

Brown trout fishing is available in the rivei's and lakes of the area and in the upper waters of the Lee, Bandon and Argideen. Good pike fishing can be had in the Inchigeela lakes.

Some lakes in the area have possibilities for development as rainbow trout fisheries. Two small lakes near Clonak±rty have already been successfully stocked with rainbow trout by the Inland Fisheries Trust and

an extensive rainbow and brown trout stocking programme has been begun on Reenydonegan Lake near Bantry. This lake, which was originally an arm of the sea, became a fresh water lake and provided good fishing until the sea got in again through a breach in the bar. A dam and sluice have now been constructed by the Trust to exclude the sea.

Sea Angling

There is some excellent sea angling, which is an important tourist attraction, in West Cork particularly at SkLbbereen, ROSE Carbery and Clonakilty. A good deal of survey work has been carried out by the Inland Fisheries Trust in recent years but much still remains to be done to assess the possibilities because sea angling is relatively new to the area and because the coastline is long and varied.

It is estimated that expenditure in the West Cork area by visitors who engage in angling for sea fish, trout and coarse fish amounts to about £30,000 a year.

SECTION C

ECONOMIC, DEMOGRAPHIC AND SOLIOLOGICAL ASPECTS

OF THE

SURVEY AREA

ECONOMIC ASPECTS 0? THE SURVEY AREA

The economic situation in the Survey area with particular reference to agriculture is discussed under two main headings:

(a) The Economic Background

(b) Economic Structure of the Farms

PART 1 - THE ECONOMIC BACKGROUND

Introduction

The economic difficulties of West Cork are those to be found in extensive areas along the whole of the Western Coast, Basically, these problems stem from the poor land resources, the large number of agricultural holdings in the smaller size categories, the distance from the main markets and the lack of non-agricultural sources of employment. All this has led to a continuous depopulation during the past century, which currently shows no sign of being reversed as is shown in the section of this report on "Demographic and Sociological Aspects of the Survey Area'.'. A considerable amount of the agricultural produce is consumed on the farm, and the small amount for sale is the primary source of economic weakness. Thus cash income in many cases comes from other sources, and unless agriculture can be radically improved so as to provide this monetary income population decline will continue, and the wants which come with a rising standard of living may still be filled abroad rather than at home.

West Cork for the purpose of this survey comprises the five rural districts of Bantry, Castletown, Schull, Skibbereen and Dunmanway. An analysis of its present economic position is not as easy as in the case of a county, for the agricultural and other statistics are usually available only on a county basis. The detailed statistics contained in the Appendix give some idea of the position of the rural districts over the last sixty years, and show clearly that in a number of instances the

Dunmanway was not included in the old Congested Districts nor has it been included in the areas scheduled in the Undeveloped Areas Acts, but it was considered desirable that it should form part of the West Cork Survey area.

situation is worse to-day that it was at the beginning of the century.

The drastic decline in the population during the present century has been a cause of a very great change in the structure of the agriculture of the area. Nevertheless, much further change in the farm economy will be necessary if the level of prosperity is to be increased sufficiently to bring a reversal in the trend of population.

Agricultural holdings

The total number of holdings in West Cork has decreased by 15 percent since 1901 the fall being the greatest in the most Western districts (Table 1, see also Appendix Table IV). Dunmanway and Skibbereen are the only Rural Districts to record a rise in the number of medium size holdings, the pattern of small holdings remaining the same. In 1901, 55 percent of the holdings in Castletown, Schull and Skibbereen were below 30 acres - in Castletown the percentage was as high as 66 percent. This rural district still has the largest number in the smallest groups - namely 60.4 percent but in all other instances the percentage of holdings under 30 acres has fallen to below 50 percent. The real fall in the number of small farms has, however, been greater than these figures show; the big rise in the holdings under 1 acre is in no way a rise in the number of small farms, but simply an increase in the number of people who are not farmers, but now have a piece of land attached to their hou6e for gardening and recreational purposes.

Recently the Rural Economy Division of *An* Foras Taluntais undertook an investigation on a completely random basis into the small holdings of West Cork, as part of a larger survey of the area. In no instance in this sample did a holding of under 15 acres provide the sole or primary source of income of the occupants,, Very few of the holdings included in the sample were being farmed intensively and a number were merely let in conacre. It is not known as yet whether this finding would apply to all areas of the Congested Districts, but it does show that in West Cork at least on a considerable proportion of these small units, the land is being held in a non-productive or only partially productive state.

Altogether there are probably between five and six thousand farms, as distinct from agricultural holdings, in the region equally divided between those under and those over 50 acres. It must, however, be

TABLE 1

AGRICULTURAL HOLDINGS, 1901 and I960

Area of holding*, acres	Yeax	BANTRY	CASTLETOWN	SCHULL	DUNMANWAY	SKIBBEREEN	WEST CORK	CORK
Under 1	1901	80	82	48	461	337	1.008	7.413
	1960	135	14	83	483	432	1.166	10.435
1 -15	1901	352	589	360	133	702	2.136	7,455
	1960	294	305	137	108	375	1.247	4,501
15 - 30	1901	375	436	450	178	831	2.270	6.357
	1960	280	443	248	141	563	1.673	3.984
30- 50	1901	329	282	347	309	731	1.998	6.623
	1960	309	252	289	226	642	1.716	5.230
30- 100	1901	345	198	232	492	527	1,814	8,021
	1960	332	165	248	533	646	1.922	7,916
100 and over	1901	232	73	58	277	136	776	4,174
	1960	161	53	103	272	158	747	4,633
TOTALS	1901	1.711	1,660	1.515	1,850	3.264	10,000	40,043
	1960	1.511	1.262	1,108	1.763	2.836	8,480	36,719

SOURCE: Agricultural Statistics 1901, I960

NOTE: 1960 figures are proviaiooal

remembered that many of the larger farms consist of a high proportion of semi-barren land, the output from which is of little inportance. Acreage is a most imperfect guide of the potential of a farm, especially in an area like West Cork.

Cropping pattern in the Survey area

The cropping pattern in West Cork deviates from the county in a number of respects. (Table U). Generally changes have been slower in West Cork. Corn acreage which was 1.4,451 in 1901 rose to 20,570 acres in 1960, an increase of 30 percent while the county acreage has risen from 120,000 to nearly 190,000 acres - an increase of 35 percent. However, the acreage of root and green crops has fallen more rapidly in West Cork than in the county. In the former the decline has been one of over 11,000 acres or 52 percent, whereas the county acreage has fallen by only one third. While the acreage under hay in the county increased from 189,000 acres to 216,000 between 1901 and 1960 the change in West Cork has been marginal - a decline of 293 acres. Table Vll in the Appendix gives details of the changes which have taken place in various years from 1901 to 1960 and shows clearly that the total crop and hay acreage in West Cork did not increase between 1933 and 1954» as did that of the county, but continued its downward trend. In 1960 the figure is lower than that of 1901, while the county figure is over 60,000 acres higher. Pasture is the primary use of the land of Cork as a whole, and of West Cork. A decline in pasture acreage, however, has been recorded in both these areas. The decrease in West Cork has been more marked, (Table 11), representing a fall of nearly one quarter, whereas in the county the decline has been nearer to 17 percent. There has been a considerable increase in the area of 'other land', partly due to the extension of forestry in the area, and partly to land previously recorded as pasture being regarded as rough grazing.

Table 11 gives the cropping pattern in West Cork in 1901 and 1960, but does not show the fluctuations which have taken place in the intervening years, nor does it show the relative growth or decline of the various crops. These are shown as far as is possible in the statistics on crops which appear in the Appendix (Tables V, VI, Vll),

TABLE II

ACREAGES UNDER CROPS, 1901 and I960

		Corn cropa	Root and Green cropa	Hay (a)	Total crop* ant' hay (b)	Paature (c)	Other land (d)	Total area
Bantry	1901	1,178	3.625	5.816	11,619	45,695	49.466	107,277
	1960	2.254	1,701	6,175	10,246	34.247	63.510	
Caatletown .	1901	1.208	2.017	3.424	6,649	28,059	38,736	74.300
	1960	582	720	3.282	4.588	17,711	31.100	
Schull	1901	1,906	2,817	3.959	8,682	27.033	21.446	57.669
	1960	2.342	1.293	3.786	7.447	19.945	29.975	
Dunmanway	1901	4,096	4,899	6.490	15.488	46.260	42.166	103.920
	1960	6.633	2,180	6.633	15.497	34.670	53.294	
Skibbereen	1901	5.063	7.623	9.875	22.571	64.382	27.820	115.371
	1960	8.759	3,716	9.395	21,999	56.076	38,180	
Weat Cork	1901	14.451	20,981	29.564	65,009	211,629	179.634	458.327
	1960	20,570	9.610	29.271	59,777	162,649	236.059	
Cork	1901	120.057	104.668	188.937	413.711	962.773	441,444	1. 843,390
	1960	189,458	65.829	215,808	474.200	819.612	549.546	

(a) 1901 - clover, aainfoln and .iraaaea under rotation, permanent paature, or fraa* not broken In rotation.

(b) 1901 - cropa, meadow and clsver.

(c) 1901 . traaa.

(d) Includei wood*, plantationa, bog, marah, mountain, water, road*, etc.

SOURCE: Acrlcultural Stetietica, 1901. 1960.

NOTE: The area by which the 960 figure* were compiled waa not quite equal In all caaea to the legal area ahown alove but the variation la so alight aa not to affect the atatiatica in any marked way.

lest Cork is not an intensive cereal growing area and never has been. Oat production is on the decline here as everywhere else, though the fall has not been as rapid as in the county as a whole. Barley acreage is rifling, particularly in recent years (except in Castletown); in Skibbereen for example, there was 1 acre of barley recorded in 1901, but nearly 2,500 acres in 1960. This rural district is by far the largest barley producing in West Cork. The steepest decline has been in wheat production; in the six years after 1954, the acreage fell by nearly 73 percent, and now only accounts for 3 percent of the total corn which is grown* Taking all corn crops together, it is clear that West Cork has deviated from the county pattern; its fluctuations have been wider, and recently while the Cork corn acreage has risen (since 1934) West Cork has shown a decline.

The acreage under root and green crops follows the sane pattern; in recent years it has decreased more rapidly in West Cork than in the county. This decline has been continuous in the former area since the aid twenties and has affected every root and green crop with the exception of sugar beet - a crop virtually unknown before that date. The region is not an extensive beet growing area; less than 500 acres were grown in either 1954 or 1960 and all but a few acres of this was produced in the Dunmanway and Skibbereen districts.

Traditionally Dunmanway and Skibbereen have been flax growing districts - though on a small scale - and the 1934 acreage figure seemed to point to a revival of this crop. However, the estimates of the Department of Agriculture show that no commercial flax was grown in West Cork in I960, so it may be presumed that this crop has died out - except perhaps for a few acres grown for thatching.

Fruit is another crop which does not have much popularity; less than 10 percent of the county acreage is produced in the Western area. One might have expected that in an area of such southerly location and mild climatic conditions fruit and vegetables would be widely grown, particularly on the smaller holdings where intensive cultivation would be possible, but this is not the case.

Over the years the acreage under hay has fluctuated considerably,

but in each of the five rural districts the 1960 acreage is almost identical with that of 1901. This differs from the county trend which shows that hay acreage is appreciably higher to-day than sixty years ago.

Apart from the acreage devoted to crops and pasture there is one further category of land worthy of mention as it is one of great importance, particularly in West Cork - it is "other land".(2) Nearly 45 percent of all "other land" in County Cork is to be found in West Cork, which itself has 51 percent of its land thus classified, V/ithin the Congested Districts this percentage is equalled only by counties Kerry, Mayo and Donegal. Of the five rural districts in the Survey area only Skibbereen has less than half its total area described as "other land". Part of such land is usable either as rough grazing or perhaps for afforestation, but some of it is waste and capable only of limited improvement.

Livestock position in the Survey area

The livestock figures have fluctuated considerably over the half century irrespective of area, but even so the 1960 statistics are in many instances almost the same as those of 1901 (Table 111). As in the case of crops, West Cork has not moved at the same speed as the rest of the county.

The cattle figures are strangely static. Bantry, Castletown and Schull show a decline in numbers in 1960 compared with the 1901 figure, while Dunraanway and Skibbereen provide the slight rise which appears in the total livestock figure (Pig. 1). This position is quite contrary to the county trend which is one of almost continuous rise. Cattle: The figures for total cattle numbers do not of course convey the complete picture, as it is also important to know what changes are taking place in the numbers in the various age groups. Details of these are contained in the Appendix (Table Vlll), but in general there has been a decrease in the number of young cattle and a slight increase in those of the higher age groups. In the county as a whole,

(2) Including woods, plantations, bog, marsh, mountain, water, roads,etc.

TABLE III

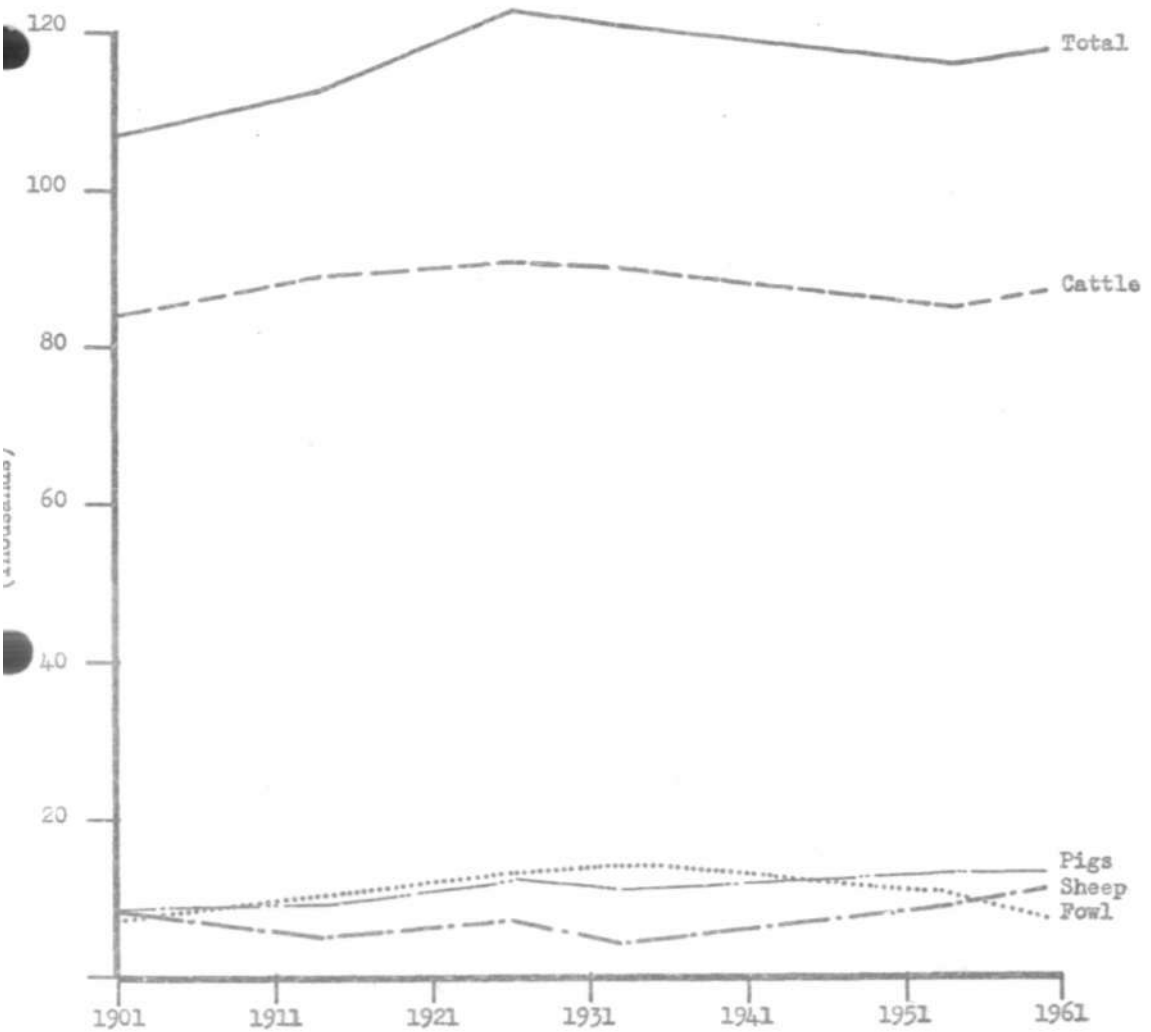
LIVESTOCK NUMBERS, 1901 *mad* I960

District	Y«at	Milch cows • heifers -in-calf	Total cattle	Sheep	Pigs	Ordinal fowl	Toul poultry
Bantry	1901	9.312	21.377	6,902	5.132	33.044	51,277
	1960	8,159	19.786	18.722	4,565	41318	59.308
Castletown	1901	6,216	17,124	11.426	2434	11.067	27.598
	1960	4,802	12,847	18.199	724	20.335	22.384
Scholl	1901	6,911	15,728	3.057	4,917	26,909	42,448
	1960	5,847	14.221	4.713	3,596	31.243	35,746
Dunmanway	1901	10,282	22.020	9,911	8.595	57,663	95,305
	1%D	Yl.Vft		8,182	13.118	W),b6B	
Skibbereen	1901	15,738	32,287	9,962	12,066	77,916	120,090
	1960	16,690	35.935	4,829	21,865	94,312	114.217
West Cotk	1901	48,459	108,536	41,258	32,864	213,599	336,718
	I960	46,690	109.773	54,645	43,868	174,796	331.526
Cork	1901	188.490	450,267	318,622	141,607	896.935	1.487,721
	I960	226,819	580.330	282,546	223,051	1,360,546	1.635.747

SOURCE: Agricultural Statistic. 1901, 1960

Fig. 1: Trend3 in Livestock Population in YTest Cork (1901-1961)

(Livestock Unit**a**)



there has been a rise in all age groups - except since 195k in the age group "three year old and over."

Cork has always been an important dairying county and the number of milch cows has been on the increase there. However, the number of ndloh oows in West Cork has actually declined since 1901, but the small increase in other cattle numbers has left the overall figure for cattle almost where it was in 1901. In 1960 cows accounted for just under ifO percent of the total cattle population. The average number of cows per holding of 15 acres and over is only 7; although the average size of herd in practice is slightly larger than this (because not every farm has a dairy herd). The fk>siti§n in regard to cattle number for the period 1901 - 1961 for the Various districts of the Survey area is shown (Fig. 2).

Sheep: The West Cork sheep pattern is greatly different to that of the county. Sheep numbers are on the increase in the Survey area and in 196O were 13,000 higher than in 1901, whereas in the county though numbers have risen since their low ebb of 195*f, they are still 36",000 below the figures for 1901. The bulk of sheep in the former area comes from Bantry and Castletown districts with Dunmanway in third place, 10,000 sheep behind. Schull has not been a sheep producing area to any extent and Skibbereen had twice as many sheep in 1901 as it had in 196*0 (Pig. 3 and Table IX in Appendix).

Pifts: Although West Cork is widely regarded as an important pig producing area, the pigs which were produced there in i960 came predominantly from Dunmanway and Skibbereen. These two districts are also the only ones to show higher pig numbers in 1960 than in 1901. In Castletown, if one is to judge by recent figures, pig rearing - never very popular - has almost died out. In other words, the popularity of pigs decreases rapidly as one moves from the East to the West of the region. As the general level of output per farm follows the same trend, the pig enterprise does not fulfill the role of a supplementary enterprise which offsets the low productivity of the other farming enters prises. Generally the five Rural Districts have followed the county trend in pig production with the exception of the most recent period -

Fig. 2: Trends in Cattle Population in West Cork (1901 - 1961)

(Absolute Figures)

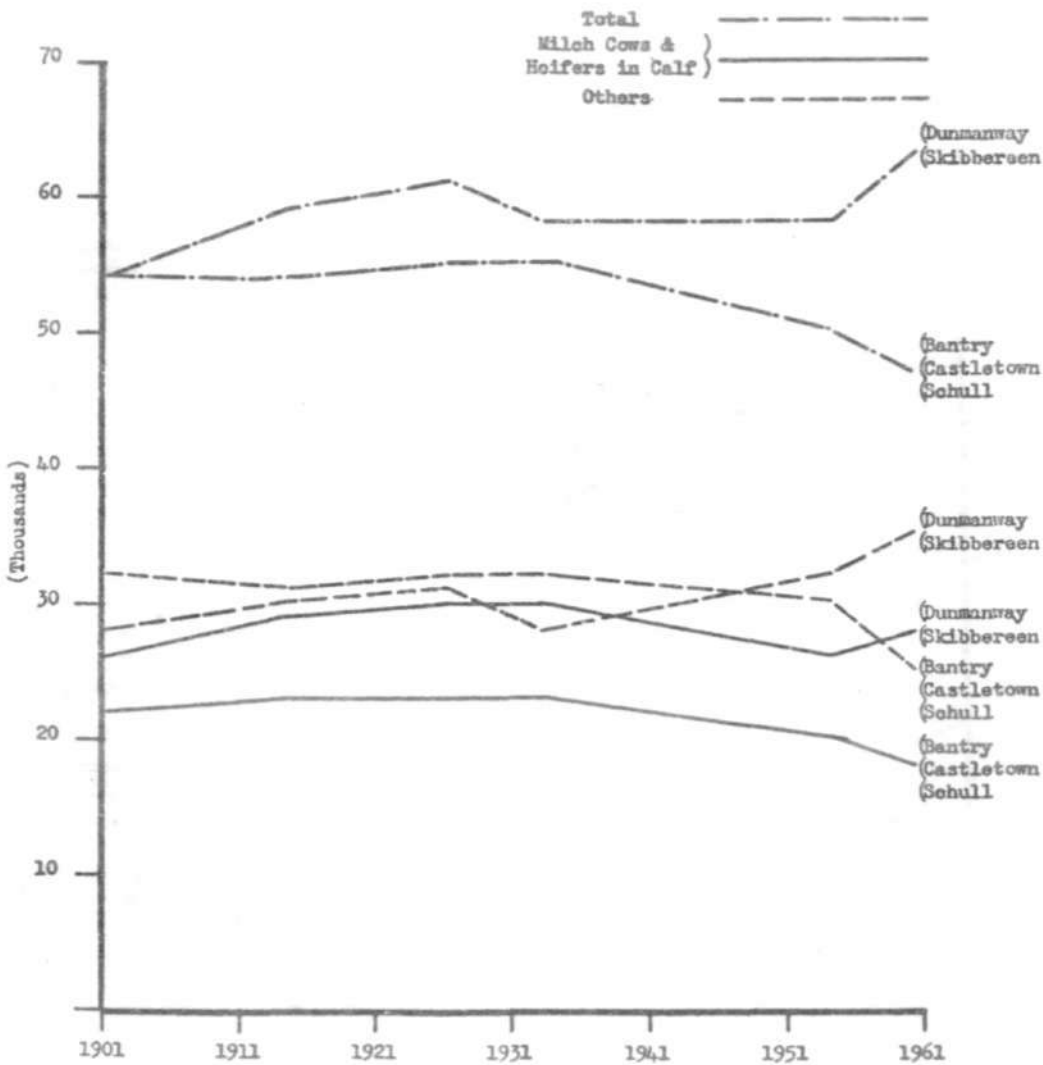


Fig. 3: Trends in Sheep Population in West Cork (1901 - 1961)

1954 - 19&0 when the county recorded a fall of over 19,000 and lest Cork had a small rise of 195 (Fig. 4, and Table X in Appendix).

Horses and Ponies: The trend in the number of horses and ponies in recent decades has been downwards (Table XI in Appendix) but not at as rapid a rate as has been experienced elsewhere in County Cork or in other parts of Ireland. Whereas in the whole of County Cork the total number of horses and ponies dropped by about one half between 1933 and 19^0, in West Cork the decrease in this period was about 30 percent. This is undoubtedly to a large extent due to the much .. slower rate at which the tractor has replaced the horse on the smaller West Cork farms compared with that on the bigger farms in the more fertile areas.

Poultry: Bantry and Dunmanway are the only rural districts in which total poultry numbers have not fallen to below the 1901 level. The county figure is almost back to where it was in 1901 and here as in West Cork, the figures in the intervening years show much fluctuation,

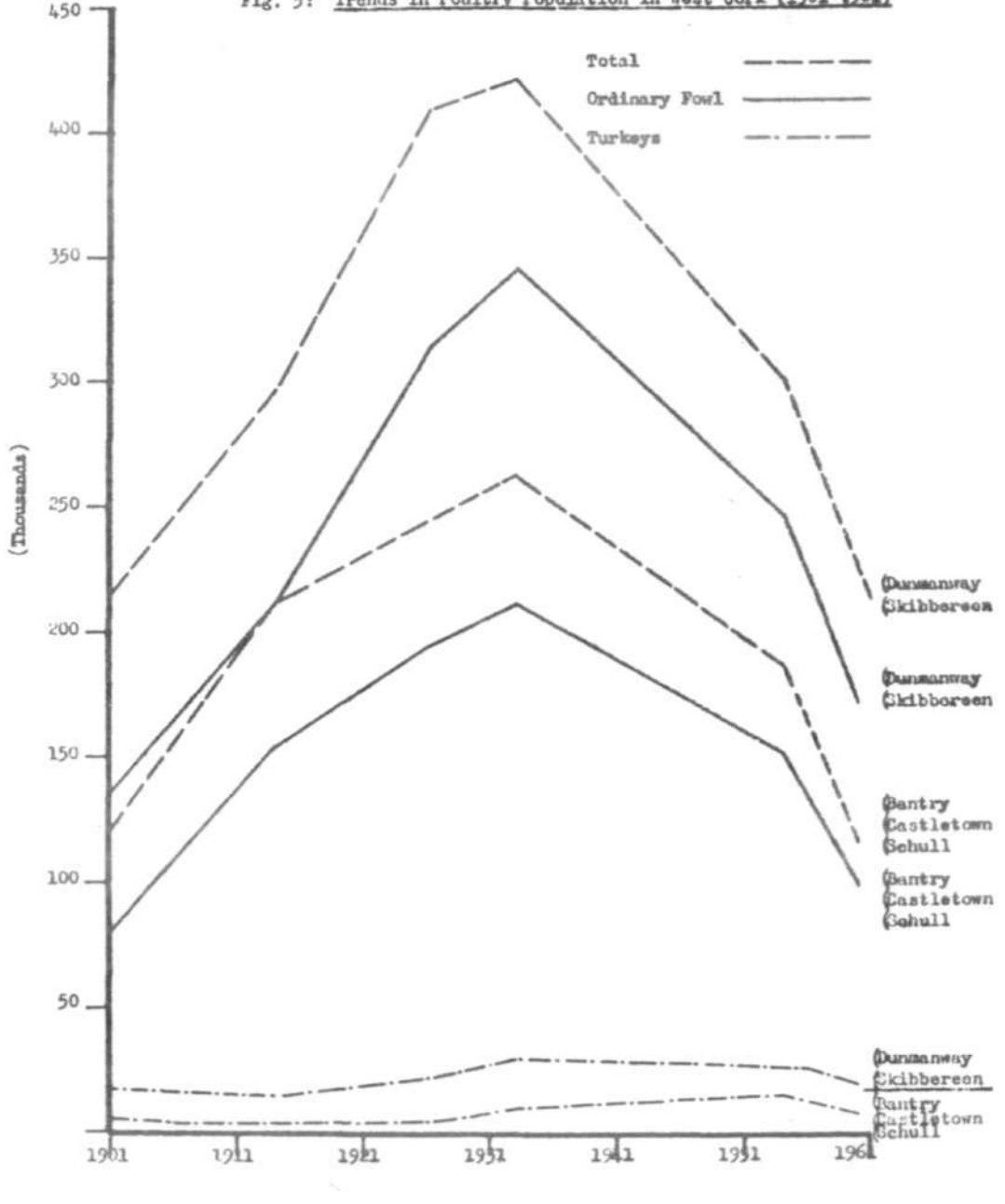
Ordinary fowl are by far the most common type and in 19<>0 represented almost 83 percent of the total poultry. In 1901, they represented only 64 percent showing not so much their relative rise in popularity, but rather the decline in geese and duck numbers. Chickens reached their peak numbers in 1933 and since then have been steadily decreasing. Again the seriousness of this lies in the fact that the decline in their farmyard enterprise must inevitably have the most marked effects on the smaller holdings. (Fig. 5, and Table HI in Appendix).

General Discussion

Population decline is quite serious, particularly in Castletown and Schull, where it is five to six times the average for the State over the period 1901 - 1961. At the same time, the problems of West Cork are very similar to those of any part of the Congested Districts, and there is no reason to believe that on balance its position is any worse than that of say, Clenties or Oughterard - in fact in some respects the Survey area is at a decided advantage. It is not by any means a homogeneous area, and falls relatively easily into separate units, the

H«. In Trenda In PU Poimatlon In Weat Cork (1901-1961)

Fig. 5: Trends in Poultry Population in West Cork (1901-1961)



one containing Bantry, Castletown and Schull, the other Dunmanway and Skibbereen. The latter area represents the more prosperous part and the acre useful land agriculturally. Dumanway is by far the most prosperous of the five Rural Districts, and has fewer of the probleos manifest elsewhere. It was not counted as part of the Congested Districts in the days of the Congested Districts Board and there is no reason to believe that its relative position has deteriorated since then.

Holdings in the lest Cork region tend to be small. Nevertheless not only has the number of the smaller holdings declined somewhat, but also those of between 30 and 50 acres. It is only in Dunmanway and Skibbereen however that the 30-100 acre holdings have increased in number. This is unusual, as elsewhere in the western counties the number of holdings between 30 and 100 acres has been increasing in line with the national tread towards a larger number of medium sized units. However, the initial problem in West Cork is not as acute as is to be found elsewhere. In 19&0, 67 percent of all holdings in the State were below 30 acres. In West Cork, Castletown is the only Rural District to come near to this figure. By way of contrast, 72 percent of all holdings in Mayo in 196*0 were below 30 acres. Nevertheless the fact remains that in West Cork as in most parts of the Congested Districts the holdings would have to be appreciably larger than the national average before any valid comparisons of "land" resources could be made. (Table IV in Appendix).

The West Cork cropping pattern is not similar to that found elsewhere in the Congested Districts as its corn crop acreage is higher than its root and green crop acreage, which is the reverse of the overall western position. However, here like the West in general, there is shortage of cash crops. It is not a corn growing area. Only recently has barley become of importance and oats remains the principal corn crop. Cash root crops are not of any importance and in this respect it does not share the advantage of other parts of Cork, which produce sugar beet. The potential for early potato production has not been developed on any scale. The south west corners of both England and Wales have both become important specialist areas for horticultural and early potato

crops. In particular, the physical environment of Pembrokeshire has much in common with that of West Cork, and in the Welsh county the early potato enterprise has come to play a most important part in the farm economy. Certainly early potatoes would fit in well with the economy of the t:-ris2l family farm of the Survey area but the peculiar marketing problems (discussed in the Marketing section) are likely to result in a relatively sloe development of this crop, although it is certain!; aising one.

One very interesting fact which emerges from the figures for hay-acreage and from most of the livestock statistics is that they aprear to have in common a marked tendency to cycli—J. variations of a very long term nature. These cycles of fifty to sixty years duration have been found in other countries over long periods. Thus it can be seen that in many instances, the Tfest Cork statistics for 1954 or 1960 are almost identical to those of 1901.

Although cattle are toe mo.-t important type of livestock, there has been very little development in cattle and milk production during the present century; indeed total cattle numbers showed only a slight increase from 1901 to 1960 whxlst milch cows were lower in i960 than in 1901. These trends are not in line with the county position. The Congested Districts in general are large sheep producers and West Cork is no exception. The general shee^ system is an extensive one, and certainly sheep would appear to be one of the enterprises offering considerable opportunities of intensification. Pig production is low except in the Dunmanway and Skibbereen districts (which are also the largest barley growers). As has already been indicated, these two areas are far better situated than the other three Sural Districts. They have most milch cows and the largest number of total cattle. They have by far the greatest number of pigs and poultry, the largest acreages under both corn and root and green crops. This cannot be attributed to larger overall size of area as, in fact, 3antry, Castletown and Schull together co->er a greater area than the other rural districts. Skibbereen and Dunmanway are better off in terms of their physical features for the production of both cash crops and livestock. Almost ail -t, barley and sugar beet grown in

West Cork comes from Dunmanway and SkLbbereen and they are more important dairying districts. Their problem would appear to be one of consolidating and expanding an agriculture which is fundamentally already viable -- which cannot be said for the other three Rural Districts.

Castletown is undoubtedly the Rural District with the most acute problems. This shows up clearly in the statistics for crops, cattle, pigs and poultry. All these have declined since 19CH, and sheep remain the one source of production which has not declined - though these have been increased in number by only four since 195V. (Table IX Appendix). Castletown has the largest percentage area of "other land" and has the greatest number of holdings in the lower acreage groups. It has had the second largest population decline in the period 1901 - 1956. As it is already a large sheep producing area and has so much land of a rough or semi-arable nature, the intensification of sheep production would probably be the most obvious way in which it could increase its income. The next poorest district is Schull, which is also the smallest, but bad though its position appears, it is nothing like that of Castletown.

Conclusions

The most important overall change which must take place in West Cork agriculture is to bring it into the market economy by the production of a much larger saleable surplus. A peasant agriculture with production on a subsistence basis is not enough to keep farm living standards in step with those of the rest of the community. Productivity both per man and per acre must be raised. If the small holding pattern in existence at the moment is to remain, then the land must be farmed more intensively with greater specialisation in the crops and livestock which exploit the advantages of their situation. The alternative is a continued increase in the size of holdings with better grassland and more oattle and sheep. To some extent the two could be made complementary; for example, Dunmanway and SkLbbereen with their concentration on dairying and barley production involve two forms of agriculture which they are already expanding.

A policy of higher output per farm will lead to a high productivity of the two basic resources of the region - land and labour. At a period when the productivity of land generally throughout Western Europe has been rapidly increasing, the land of West Cork has remained virtually static in its production. Labour productivity has certainly risen because of the fall in the labour force with a constant output level. Although a falling labour force in agriculture is a trend common to the advanced countries throughout the world, the rate of fall in West Cork is certainly much greater than that of agricultural areas generally.

Structural changes in the organisation of the agricultural industry in the area will undoubtedly continue to take place. The optimum combination of the available land, labour and capital resources will only be achieved by a process of adjustment that will give rise to a number of problems. The solution of these problems will call for additional agricultural research, more intensive advisory service, and above all for the acceptance by the farmer of a progressive rather than traditional farm policy.

TABLE IT

NUMBERS OF HOLDINGS IN THE SURVEY AREA, AND SIZES (ifl acres)

District	Yoar	Uador 1 aero	1 -3	5 -10	10 •13	13-90	30-30	50-100	100 - 200	200 and ov«r	TOTAL
Baa try	1901	80	83	267		373	329	345	171	61	1.711
	1914	127	67	240		319	307	374	174	66	1.638
	I960	135	82	114	98	280	309	332	126	S3	1.311
Csstletown	1901	82	90	499		436	282	198	52	21	1.660
	1914	59	77	343		443	284	196	62	18	1.484
	1960	14	33	136	166	443	232	163	43	10	1.262
Schull	1901	48	69	291		450	347	252	32	6	1.515
	1914	90	63	222		386	347	239	66	7	1.440
	1960	83	39	46	V	248	289	248	94	9	1.108
Dunmaawsy	1901	461	49	84		176	309	492	211	66	1.850
	1914	528	34	76		176	289	471	231	61	1.866
	1960	483	47	31	30	141	226	533	227	«	1.763
Sklbbsrsca	1901	337	172	530		631	731	527	114	22	3.264
	1914	444	133	476		774	714	525	124	27	3.217
	1960	432	97	134	144	563	642	646	130	28	2.836
Total, Wsat Cork	1901	1,008	463	1,671		2,270	1,998	1,814	600	176	10.000
	1914	1.248	394	1.359		2.098	1,941	1.825	657	179	9.643
	1960	1.166	298	469	480	1.673	1,716	1.922	620	127	8.480
County Cork	1901	7.413	2.599	4.836		6.357	6.623	8.021	3.360	814	40.043
	1914	11.277	2.341	- 3.772	-	3.358	5.901	7.621	3.580	964	40.814
	I960	10.435	1.H91	- 2,610		3.984	5.230	7.916	39<>:'	751	36.719

NOTE; Figures by Rural District noi STsilsble in 1926. 1933 and 1954.

TABLE V

ACREAGES OF CORN CROPS IN THE SURVEY AREA

DISTRICT	TEAR	WHEAT	OATS	BARLEY	TOTAL CORN CROPS (a)
	1901	517	1.655		2.178
BAinTRY	1914	513	1,580	6(b)	2.108
	1926	591	2.174	7	2.783
Total acreage	1933	359	1.965	5	2.332
107,277	1954	138	2.308	243	2.690
	1960	48	1.798	416	2.254
	1901	-	1.196	•	1.208
CASTLETOWN	1914	16	916	1 (b)	937
	1926	58	992	17	1.112
Total acreage	1933	11	896	-	907
74.300	1954	9	601	162	773
	1960	3	551	28	582
	1901	671	1.109	87	1.906
SCHULL	1914	699	1.170	69(a)	1.955
	1926	709	1,483	35	2.228
Total acreage	1933	560	1,676	28	2.265
57.669	1954	416	2.104	475	2.996
	1960	104	1.741	496	2.342
	1901	298	3.744	•	4.096
DUNMANWAY	1914	414	4.569	26(a)	5.124
	1926	533	4.959	68	5.658
Total acreage	1933	438	4,884	16	5.345
103.920	1954	585	5.527	585	6.699
	1960	208	4.727	1.695	6.633
	1901	800	4.205	1	5.063
SKIBBEREEN	1914	1,283	4.598	66(b)	5.939
	1926	1.379	4.827	66	6.354
Total acreage	1933	1.163	5.217	17	6.398
115.371	1954	1.066	7.519	1.533	10.119
	1960	240	5.993	2.492	8.759
	1901	2,286	11.909	88)	14.451
	1914	2.925	12.833	168 (b)	16.063
TOTAL	1926	3.270	14,435	193	18.135
WEST CORK	1933	2.531	14.638	66	17.247
	1954	2.067	18.059	2.998	23.277
	1960	595	14.792	5.127	20.570
	1901	6.038	96.649	17.109	120.057
CO. CORK	1914	7.033	107.356	17.468 (b)	132.197
	1926	8.237	101.004	11.960	121.611
Total acreage	1933	9.946	98.466	10.621	119.109
1.843.590	1954	59.493	83.826	39.952	183.353
	1960	28.005	70,131	90.972	189.458

(a) Including other corn crop*. (b) Barley aad here.

TABLE VI

ACREAGES OF ROOT AND GREEN CROPS IN SURVEY AREA

	YEAR	POTATOES	TURNIPS	MANGELS	SUGAR BEET(a)	CABBAGE	TOTAL ROOT AND GREEN CROPS
BANTRY	1901	2.130	730	422	.	208	3,625
	1914	1.876	777	238 (c)		200	3,239
	1926	1.094	887	396		237	3.466
	1993	1.444	813	448		268	3,007
	19)4	1.1W	560	314	5	117	2.219
	1960	901	406	311 (d)	-	58(a)	1.701
CASTLETOWN	1901	1.311	220	103	-	163	2.017
	1914	1.402	131	159 (c)	-	98	1.825
	1926	1.360	291	145	-	252	2.185
	1933	1.194	217	190	-	48	1.649
	1954	790	76	44	-	-	961
	I960	309	60	71(d)	-	-	720
SCHULL	1901	1.706	482	362	.	114	2.817
	1914	1.506	400	371 (c)	.	45	2.408
	1926	1.340	562	391		62	2.435
	1933	1.165	657	578	-	52	2.461
	1954	074	372	338	u	26	1.655
	1960	540	350	328 (d)	9	48(e)	1.293
DUNMANWA*	1901	2.847	1.300	377		286	4,899
	1914	2.301	1.390	444(c)		156	4.581
	1926	2.226	1.634	638	8	229	4.859
	1933	1.839	1,273	336	-	92	3,771
	1954	1.356	545	452	261	26	2.829
	1960	880	433	441 (d)	278	68(e)	2.180
SKIBBEREEN	1901	4.309	1,546	1,160	.	374	7.623
	1914	3.829	1.945	1.034 (c)	-	263	7.254
	1926	3.403	2.301	1.154	4	321	7.303
	1933	2.628	1.737	1.207		389	6.007
	1954	1.966	1.043	932	176	143	4.574
	1960	1.405	797	1.028 (d)	193	170(e)	3.716
TOTAL WEST CORK	1901	12.503	4.278	2.424		1.143	20.981
	1914	11.114	4.643	2.246 (c)	-	770	19.307
	1926	10.223	5.675	2.724	12	1.101	20.248
	1933	8,270	4.697	2.959		849	16.895
	1954	6,182	2,598	2.080	453	312	12.238
	1960	4.323	2.046	2.179 (d)	471	344 (e)	9.610
TOTAL CO. CORK	1901	46.936	32.408	17.118	-	4.768	104.668
	1914	41.423	36.389	17,826 (c)	-	3.331	102.550
	1926	37.050	34.234	17.362	61	4.183	95.239
	1933	30.043	29.376	19.129	29	3.276	85.376
	1954	23.654	14.119	13.292	13.968	1.222	75.968
	I960	18.732	11.59)	12.685	14.566	5.807 (e)	65.829

(a) Not treated as a separate category until 1926. (b) Including other root and green crops, (c) Including mangels sad beetroot, (d) Including mangela and fodder beet, (e) Including cabbage and kale.

TABLE VII

ACREAGES UNDER OTHER CROPS IN THE SURVEY AREA

	YEAR	FLAX	FRUIT w	HAY	TOTAL CROPS ^Flax. Fruit and Hay)	PASTURE		OTHER LAND (b)
	1901	*2*		5.816 (c)	11.619(c)	45,695 (0		49.466
	1914		13	7.191 M)	12.564	42.572 (O		52.162
BAN TRY	1926		16	8.154	14.419	34,219		56.639
	1933			8.000	13.337	25.984		67,936
	1954		44	6.762	11.715		95,562	
	1960		35(h)	6.175	10,246 (i)	34.247		63.510
	1901	•		3.<2«$_{1}$c)	6,649 (e)	28.059 (0		38,73,
	1914		7	4.212 (d)	6.988	27,921 (0		39.418
	1926		25	4.830	8.152	21,593		44.551
CASTLETOWN	1933	(I)	2	5.101	7.659	17,264		49.373
	1954		6	3.642	5.382		68.918	
	1960		-	3.282	4.588 (i)	17,711		51,100
	1901	•		3.959 (c)	8.682 (e)	27.0M (0		21.446
	1914		15	4.637 (d)	9.030	27.327 <0		21.350
	1926		7	4.994	9.664	23,934		23.871
SCHULL	1933	(«)	5	5.698	10.429	20.594		26,646
	1954		11	4.303	8.965		48.704	
	1960		5(h)	3.786	7.447 (i)	19.945		29.975
	1901	3		6,490 (c)	15.488(e)	46.260 (f)		42.166
	1914	28	15	7.696 (d)	17.444	43,706 (f)		39.418
	1926	64	18	9.722	20,321	40,595		43.004
DUNMANWAY	1933	(g)	18	8.427	17,561	36.704		49,655
	1954	168	18	6.959	16,673		87,247	
	1960		16(h)	6.633	15.497 (i)	34,670		53.294
	1901	10		9.875 (e)	22,571 (e)	64.582 *(O*		27.820
	1914	17	30	12.117 (d)	25.357	56.558 (0		33.474
	1926	4	31	11.827	25.519	58.016		31.836
SKIBBEREEN	1933	(g)	26	11,744	24.175	57.452		33.744
	1954	29	42	9.388	24.152		91.219	
	1960		48(h)	9.395	.21,999 0)	56.076		38.180
	1901	15		29.564 (c)	65.009 (e)	211.629 iff)		179.634
	1914	45	80	35.853 (d)	71.383	198.084 (f)		185.822
TOTAL	1926	68	97	39.527	78,075	176,557		199.901
VEST CORK	1933	(g)	69	38.970	73.181	157.998		227.354
	1954	197	121	31,054	66.887		392.182	
	1960		104(h)	29.271	59.777 (i)	162,649		236.039
	1901	49		188.937 (c)	413.711 (e)	982,773 (O		441,444
	1914	209	1,105	223,253 (d)	459.314	927,548 (0		456.854
TOTAL	1926	192	1.049	248.293	466.384	926.038		451.168
CO. CORK	1933	(g)	971	243.336	448.792	869.320		525.478
	1954	405	1.308	206,157	467.191		1.376.217	
	1960		1,170 (h)	215,808	474.200 Q)	819.612		549,546

(a) Not given separately until 1914.
(b) Including woods, plantations, bog. marsh. mountain, water, roads. etc.
ic) Clover, sainfoin, and grasses under rotation. permanent sasrure or grass not broken in rotation,
(d) 1st, 2nd and 3rd year bay, permanent meadow.
(e) Crops, meadow and clover.
(0 Grass.
(g) Not given.
(h) Tree and berried fruit.
(•) Includ cs also vegetablei, borticnltvra 1

TABLE VII

CATTLE NUMBERS IN THE SURVEY AREA

	Year	Bulls (a)	Milch cows	Heifers in calf (b)	3 years and up (c)	2 years and under 3	1 year and under 2	Under 1 year	Total Cattle
BANTRY	1901			9,312		1,921	4,007	6,137	21,337
	1914		9,336	254		2,436	3,672	5,518	21,431
	1926	207	9,298	463		3,290	3,657	6,333	23,248
	1933	119	9,380	168	435	2,254	4,313	5,619	22,288
	1954	166	7,737	595	903	2,308	3,438	5,246	20,393
	1960	114	7,503	656	760	2,201	3,427	5,125	19,786
CASTLETOWN	1901			6,216		2,037	4,457	4,434	17,124
	1914		5,937	322		2,398	3,705	3,920	16,360
	1926	53	5,557	33		2,085	3,334	4,226	15,288
	1933	26	5,732	78	638	2,120	3,914	4,031	16,539
	1954	46	4,983	174	191	1,321	3,349	3,805	13,869
	1960	35	4,732	70	236	1,171	2,986	3,617	12,847
SCHULL	1901			6911		1,185	2,683	4,949	15,728
	1914		7,267	213		1,584	2,906	4,555	16,654
	1926	98	6,835	348		1,688	2,345	4,852	16,166
	1933	77	7,275	412	233	1,213	2,166	5,002	16,378
	1954	68	5,773	244	342	1,851	2,681	4,287	15,246
	1960	54	5,541	306	352	1,643	2,561	3,764	14,221
DUNMANWAY	1901			10,282		1,792	3,116	6,830	22,020
	1914		10,875	271		2,547	3,270	6,652	23,960
	1926	361	11,410	749		3,261	3,185	7,257	26,223
	1933	284	11,438	150	366	2,143	4,125	5,910	24,416
	1954	287	9,734	672	662	3,057	4,297	6,045	24,754
	1960	205	10,215	977	640	2,952	5,079	6,916	26,984
SKIBBEREEN	1901			15,738		2,174	4,272	10,103	32,287
	1914		17.087	337		2,422	4,374	10,448	34,923
	1926	333	17,150	1,165		2,825	3,484	9,702	34,659
	1933	274	17,647	425	263	1,749	4,907	8,376	33,641
	1954	251	14,523	1,276	547	2,450	5,337	8,975	33,358
	1960	182	15,099	1,591	860	3,116	6,023	9,064	35,935
TOTAL WEST CORK	1901			48,459		9,109	18,515	32,453	108,536
	1914		50,502	1,532		11,387	17,927	31,093	113,328
	1926	1,052	50,250	2,758		13,149	16,005	32,370	115,584
	1933	780	51,472	1,233	1,935	9,479	19,225	28,938	113,262
	1954	818	42,750	2,961	2,645	10,987	19,102	28,358	107,620
	1960	590	43,090	3,600	2,848	11,083	20,076	28,486	109,773
TOTAL COUNTY CORK	1901			188,490		51,574	81,013	129,186	450,267
	1914	5,830	205,692	6,421		65,729	92,646	144,017	520,335
	1926	5,857	203,180	14,364		65,925	76,287	141,897	507,510
	1933	5,591	217,959	8,035	12,598	55,226	98,252	103,646	540,979
	1954	4,805	197,761	15,421	18,686	68,550	143,318	135,647	544,516
	1960	3,320	208,239	18,580	16,666	70,881	120,234	142,410	580,330

(a) not given separately until 1926. (b) heifers in calf included with milch cows, 1901.
(c) category is "two year old and upwards" until 1933

TABLE IX

SHEEP NUMBERS IN THE SURVEY AREA

District	Year	Ran*	Ewes	1 year and over	Under 1 Year	Total
BANTRY	1901	(a)	2,865	1.262	2.775	6.902
	1914	95	2.897	1.124	2.295	6.411
	1926	333	5.691	2.403	4.607	13.034
	1933	234	6.949	2.810	4.326	14.31°
	1954	183	5.812	3.428	4.304	13,547
	1960	229	7.507	5.685	5.301	18,722
CASTLETOWN	1901	(a)	4.764	2.419	4.243	11,426
	1914	139	5.867	1.357	3.884	11.247
	1926	129	6.913	989	4.999	13.030
	1933	123	2,962	2.321	2.309	7.715
	1954	195	9.171	3.545	5,284	18.195
	1960	185	7.972	4.989	5.053	18.199
SCHULL	1901	(a)	1.334	395	1.328	3.057
	1914	16	620	54	603	1.293
	1926	28	488	86	541	1.143
	1933	35	403	230	529	1.197
	1954	51	1.367	532	1.322	3.272
	1960	81	1,431	1.502	1.699	4.713
DUNMANWAY	1901	(a)	4,141	613	5.157	9.911
	1914	113	2,026	445	2.383	4.967
	1926	149	2,687	626	2.572	6.034
	1933	79	2.878	315	1,994	5.266
	1954	72	2,772	1.058	2.260	6.162
	1960	101	3.285	1.860	2,936	8.182
SKIBBEREEN	1901	(a)	4.041	743	5.178	9.962
	1914	61	1.169	321	1.478	3.029
	1926	116	1.551	568	1.657	3.892
	1933	43	1.095	339	1,007	2.484
	1954	51	1.518	537	1.690	3.796
	1960	77	1.971	940	1.841	4.829
TOTAL WEST CORK	1901	(a)	17.145	5,432	18.681	41.258
	1914	424	12.579	3.301	10.643	26.947
	1926	755	17.330	4.672	14.376	37.133
	1933	514	14,287	6.015	10.165	30.981
	1954	552	20,640	8.920	14.860	44.972
	1960	673	22.166	14.976	16.910	54.645
TOTAL COUNTY CORK	1901	(a)	131.967	38.704	147.951	318.622
	1914	3.167	88.796	27.642	102,105	221.710
	1926	3.835	96.588	23.359	103,523	227,305
	1933	3.077	93.556	24.491	104.454	225.578
	1954	2.976	87,420	20.416	99.627	210.439
	1960	3.784	116.326	30.473	131.963	/2S2.546

(a) Not calculated separately until 1914

TABLE X

PIG NUMBERS IN THE SURVEY AREA

District	Year	Boars	Sows	3 months and up	Under 3 months	Total
BANTRY	1901	5	519	11 (a)	4.617 (c)	5.152
	1914	3	365	161 (b)	3.638 (d)	4.167
	1926	6	496	2,879	2.951	6.332
	1933	9	553	2.275	2.715	5.552
	1954	9	610	2.008	3.037	5.664
	1960	11	531 (e)	1.817	2.206	4.565
CASTLETOWN	1901	3	232	129 (a)	1.770 (c)	2.134
	1914	3	165	127(b)	1.323 (d)	1.618
	1926		209	993	1.506	2.708
	1933	2	120	440	876	1.368
	1954	2	177	724	1,240	2.143
	1960	2	45(e)	284	393	724
SCHULL	1901	4	606	465(a)	3.842(c)	4.917
	1914/	6	518	308 (b)	4,031 (d)	4,863
	1926	3	429	1.815	1,839	4,086
	1933	5	393	1.886	2,216	4,500
	1954	4	280	1.313	1.218	2,815
	1960	6	372 (e)	1.603	1.615	3.596
DUNMANWAY	1901	9	1,016	122 (a)	8.595 (c)	8.595
	1914	11	988	1.411 (b)	6.517 (d)	8.927
	1926	31]	1.067	4.416	5.219	10.733
	1933	18	1,126	4,919	5.170	11,233
	1954	17	1.184	6.032	5.401	12.634
	1960	24	1,321 (e)	6.495	5.278	13.118
SK1BBEREEN	1901	9	1,508	56(a)	10.493(c)	12.066
	1914	13	1,676	2.349 (b)	11.275 (d)	15.313
	1926	34	1,558	7.751	7.333	16.676
	1933	14	1,309	7,976	5.797	14.996
	1954	33	1.768	10.224	8,092	20.117
	1960	39	2.083 (e)	11.656	8.087	21.865
TOTAL VEST CORK	1901	30	3.881	783 (a)	29.317(c)	32.864
	1914	36	3,712	4.356 (b)	26.784 (d)	34.888
	1926	74	3.759	17.854	18,848	40,535
	1933	48	3,501	17.496	16.774	37.649
	1954	65	4.019	207301	18,988	43.373
	1960	82	4.352 (e)	21.855	17.580	43,868
TOTAL COUNTY CORK	1901	236	17.077	4.535 (a)	119.759(c)	141,607
	1914	201	18.118	23.123 (b)	125.001 (d)	166,443
	1926	264	18.289	76.173	77.796	172.522
	1933	303	18.081	78.219	74.724	171,327
	1954	463	24.832	116.025	101.172	242.492
	1960	518	25.058i(e)	107.644	89,801	223.051

(a) One year and opwarda.
(b) 6 months and upwards
(e) Under 1 year.
(d) Under 6 months.
M Including filta.

TABLE XI

HORSES AND PONIES IN THE SURVEY AREA

District	Yest	Broken horses used in agriculture	Total horses and ponies
BANTitY	1901	1.134	1.709
	1914	1.270	1.684
	1926	1.370	1.544
	1933	1.377	1.577
	1954	1,266	1,449
	1960	(a)	1.242
CASTLETOWN	1901	688	843
	1914	759	913
	1926	901	940
	1933	833	906
	1954	830	900
	1960	(a)	772
SCHULL	1901	863	1.148
	1914	1.034	1.377
	1926	1.145	1.306
	1933		1.424
	1954	1.026	1.U5
	1960	(a)	877
DUNMANWAY	1901	1.521	2,262
	1914	1,727	2.570
	1926	2.062	2.497
	1933	2.071	2.460
	1954	1.825	2.129
	1960	(a)	1.714
SKIBBEREEN	1901	2.277	3.503
	1914	2.653	3,624
	1926	3,088	3.573
	1933	3.267	3.648
	1954	2.815	3.169
	1960	(a)	2.423
TOTAL "•EST CORK	1901	6.482	9.465
	1914	'.443	10.168
	1926	9.566	9,860
	1933	r.041	10,015
	1954	-.782	8.762
	1960	(a)	7,028
TOTAL CO.CORK	1901	32.576	55.539
	1914	36.533	61.968
	1926	39.757	54.455
	1933	41.470	56.610
	1954	34.109	40.619
	1960	(a)	28.769

(a) oot given

TABLE XII

POULTRY NUMBERS IN THE SURVEY AREA

District	Yemr	Turkey*	Geese	Dock!	Ordinary fowl	Total
BANTRY	1901	1,792	7.430	9,011	33.044	51.277
	1914	1.291	9.966	12.539	60.685	84.486
	1926	1,712	6,336	11.892	82,111	102.111
	1953	4.902	5,610	12.771	93.601	116,884
	1954	10,442	2.820	5.275	71,160	89.697
	1960	5,237	1.553	3.700	48,818	59.308
CASTLETOWN	1901	157	2.875	5.499	18,067	27,598
	1914	176	3.188	6.093	30,345	39,802
	1926	221	2.550	8.186	37,117	48,074
	1935	429	1,558	5,606	34,113	41.726
	1954	2,018	429	1.112	31.284	34.843
	1960	1,333	258	438	20,355	22.384
SCHULL	1901	1,800	5.727	8.012	26.909	42.448
	1914	1.328	6.193	11.505	68.147	87.173
	1926	1.281	3.311	12.456	71.001	90,049
	1933	4,549	4.996	13.286	84.015	106,846
	1954	3,841	1.306	3,065	51,536	59.748
	1960	1.995	978	1.530	31.243	35.746
DUNMANWAY	1901	8,054	14.027	15.561	57.663	95.305
	1914	7.330	12,585	17.954	86.680	124.549
	1926	11.006	12,157	19,597	145.601	187,361
	1933	18.488	10,572	17,609	152,595	190,064
	1954	13.473	6,461	8,193	104,796	132,923
	1960	10.935	3.652	5.216	80,068	99,871
SKIBBEREEN	1901	8.342	16.575	17.257	77.916	120,090
	1914	6,545	16,811	23.606	125,005	171,967
	1926	10,337	15.198	27,393	169.808	222,736
	1933	12,343	12,781	17,924	190,375	233,423
	1954	16,082	7.651	6,873	142.463	173.069
	1960	9,813	5.364	4,728	94,312	114.217
TOTAL WEST CORK	1901	20,145	47,634	55.340	213.599	336.718
	1914	16,670	48,743	71,697	370.862	507.977
	1926	24,557	39.552	79.524	505,638	650,331
	1933	40,711	35.517	67.196	554.699	688.943
	1954	45,856	18,667	24.518	401.239	490,280
	1960	29,313	11,805	15.612	274,796	331.526
TOTAL COUNTY CORK	1901	131.253	236.313	223.220	896.935	1.487.721
	1914	129.499	257,325	346,585	1.740,036	2.473.445
	1926	132.113	212,301	331,174	2,198,222	2,873.810
	1933	175.994	188,399	275.953	2.472,633	3.112,979
	1954	188.160	95,713	99.168	1,732.507	2,115.548
	1960	144,091	63,176	67,914	1,360,566	1.635.747

Agricultural Output

The agricultural output of West Cork in i960 amounted to approximately £lfe-nu or just over 2? per cent of the total national agricultural output. As shown in Table Q l l £4.1m. of this output was from livestock and livestock products and £0.3m. from crops (output includes crops and livestock production which is consumed in the farmhouse). Nearly two-thirds of the total output came from dairying and cattle production and a further 20 percent from pigs. The value of output from sheep was very small, although this may be partly due to an under-estimate of the production of sheep on the hills.

TABLE Xlll: Agricultural Output in West Cork, 1960.

Product	Total Output £m.	Percent of Total
Livestock and Livestock Products		
Milk	1.70	38.0
Cattle	0.99	22.2
Pigs	0.96	21.5
Sheep	0.14	3.1
Poultry	0.34	7.6
	4.13	92.4
Barley	0.04	0.9
Other Cereals	0.07	1.6
Sugar Beet	0.04	0.9
Potatoes	0.11	2.4
Other	0.08	1.8
	0.34	**7.6**
Total Agricultural Output	4.47	100.0

Of the five Rural Distracts included in this survey, the two most easterly - Dunmanway and Skibbereen - account for almost two-thirds of the total production of the area (Table XIV). The intensity of production per acre of total land falls as one travels westwards across the area; in Skibbereen output per acre is over £14 compared with £5.7 in Castletown. The range of output per acre of crops and pasture between districts is not so great; there is a much greater incidence of very poor land in the western part of the Survey area and the differences in land productivity is much smaller if this 1 -is disregarded. This variation in land quality is of very grecr importance in the present economic position for it is one of the causes of the very wide range of incomes in the area which are earned on farms of any given acreage. Farm incomes, in the sample of farms surveyed, range from £125 to over £1,700 per annum for farms of over 100 acres, and from £25 to £480 for farms of under 30 acres.

TABLE *XLV:* Agricultural Output by Rural District

Rural District	Total Output,	Output per acre of crops and pasture, £	Output per acre of total area of land, £
Skibbereen	1.o5	21.1	14.2
Dunmanway	1.16	23.1	11.2
Castletown	0.42	18.9	5.7
Bantry	0.74	16.5'	6.8
Schull	0.50	18.5	8.8
West Cork	4.47	20.1	9.8

Factors Determining Farm Income Levels

To assess the economic factors determining the levels of farm incomes a survey was made of a sample of farms in West Cork. Initially 120 farm records and accounts were being kept, but due to illness, migration, etc. only 98 farm3 completed their accounts. The original sample was a stratified one according to farm size, an equal number of farms being picked

at random from the 1960 Agricultural Enumeration from Sklbbereen and Dunmanway Rural Districts combined and from Castletown, Bantry and Schull Rural Districts combined. The farm survey discussed here was conducted in the 12 month period beginning April 1961 and the average outputs and family farm incomes from stratified random samples of the 98 farms included in the survey are shown in Table XV. Total output per farm

TABLE XV: Farm Incomes and Total Outputs

	Farm size, adjusted acres	No. of Farms	Average actual acreage	Average adjusted acreage	Total Farm Output	Average. family farm income	Family labour units per farm
						£x.	
Skibbereen-	0-30	19	25.1	18.5	530.2	278;5	1.1
Dunmanway	30-50	17	66.1	38.5	841.7	408.1	1.7
	50 +	13	115.3	78.2	1,884.1	834.4	1.8
Castletown-	0-30	24	26.0	17.0	305.7	174.6	1.2
Bantry-Schull	30-50	8*	77.9	39.4	701.6	401.1	1.1
	50 +	17	193.7	74.9	1,018.3	508.4	1.6

* The small number in this group is primarily a result of adjusting the acreage of many of the farms in the 30-50 acre group in the 1960 Enumeration which left the farm in the under 30 acre group in the survey classification.

by type of product according to farm size category is shown in Table XVI. All figures per acre refer to 'adjusted acres' and outputs and incomes refer only to those directly earned from the farm itself.

The outstanding features of the findings of this survey were the low outputs and low incomes of the farms of less than 30 adjusted acres*, and the lower farm incomes in all size categories in the western part of the region. With an average total farm output of just over £300 per farm on the 24 farms of under 30 acres in Bantry, Castletown and Schull, the average family farm incomes vrere bound to be small. (Farm income here includes the value of

* The adjustment was that of reducing hill and other poor grazing to the equivalent acreage of pasture land. This is an arbitrary process, but does give a broad comparability in terms of the land of the farms in each group.

farm produce consumed in the home.)

TABT'E XVI: Total Output per Farm by Type of Product (£)

	Farm size adjusted acres	Milk	Pigs	Poultry	Cattle	Sheep	Crops	Total*
Skibbereen-	0-30	155.1	167.O	29.2	98.9	-	16.8	530.2
Dunmanway	30-50	208,5	315.7	36.7	174.9	20.5	18.7	841.7
	50 +	496.5	579.6	34.9	539.8	8.6	136.9	1,684.1
Castletown-	0-30	103.0	42.9	7.4	79.4	5.4	16.2	305.7
Bantry-Schull	30-50	201.1	165.O	37.5	184.0	6.1	16.7	701.6
	50 +	272.8	203.3	40.4	311.0	69.4	9.2	1,018.3

Consumption of farm produce and miscellaneous output included.

Cost Structure of the Farm:

The lower intensity of production in the more westerly rural districts is reflected in the cost structure of the farms there. The most noticeable feature was that the costs per adjusted acre all lay around £7 irrespective of size of farm. As shown in Table XV11 this means an average total outlay of £131 per annum in the smallest size group rising to £510 in the largest size group. The major single item was feedingstuffs, accounting for half the total in the smallest farms falling to just over one-third on the over 50 acre farms. Fertiliser expenditure per adjusted acre was very small, on average only 10s. to 12s.,and varying little between different size groups.

In the Skibbereen/Dunmanway areas farm expenses were much higher, around £11-£13 per adjusted acre on average. As shown in Table XV11 the pattern is, however, very similar; a relatively high proportion on feedingstuffs, fertiliser C03t3 of an average of 15s. to 22s. per adjusted acre and somewhat higher seed and machinery expenses due to the higher proportion of tillage in these eastern areas.

TABLE XV11; Expenses per Farm (£)

Area	Farm size, Adjusted a°rt»	Purohased Feed	Fert. & lime	Seed	Sub-Total	Hired Labour	liioh.	Hent, rates eto.	Mi so.	Sub-Total	Total Costs
Skibbereen-Ounnianway	0-30	140.6	22.8	16.4	179.8	2.9	32.8	18.6	20.7	75.0	254.8
	30-50	266.1	28.1	21.1	315.4	8.0	51.0	28.6	30.7	118.3	433.7
	50 •	436.0	81.8	54.8	572.6	129.2	201.7	97.9	52.3	481.1	1.053.7
Castletown-Bantry-Sohull	0-30	66.5	10.1	10.5	86.9	1.6	16.7	16.1	10.0	44.4	131.3
	30-50	163.7	19.8	17.4	200.9	5.8	41.4	35.5	19.8	102.5	30J.4
	50 •	203.6	37.2	23.0	263.8	39.7	121.9	47.3	37.8	246.7	510.5

Income in the 0-,30 acre Farm frroup

Caatletown-Bantry-Schull; If £400 is taken as the minimum farm income for an economically viable farm unit* then not one of the 24 farms in the under 50 adjusted acre group in the Caatletown-Bantry-Schull sample is an economic business; only two had farm incomes of over £500. Half the farms in the group had farm incomes of between £100 and £200. The variation in the results in these 24 farms can be seen in Appendix 1 which gives the results for the upper, middle and lower thirds of the sample**. These figures show in particular the very poor position of the lower one-third of the sample where the income per farm was only £JaJ>t or under £4 per adjusted acre. This was due to the very low level of output on these farms, for a gross output of under £10 per acre on a small farm is far too low to allow any opportunity for providing a reasonable livelihood.

The better farm incomes of the upper third (Appendix 1) compared with those of the middle group came from both a higher level of output per acre and a slightly lower level of expenditure. This higher output was primarily due to more intensive dairy enterprises for, rather surprisingly, the average pig enterprise was larger in the middle income farm group than on the upper income farms. There was, however, also a higher output of grain on these higher income farms.

In general the costs per farm were low for almost all items. The only outstanding exception to this is the expenditure on purchased feedingstuffs in the middle income group. The other figures, however, show very little opportunity for cost reduction, and improved farm incomes must almost certainly depend upon increasing the level of farm output.

Skibbereen-Dunmanway; In the under 50 adjusted acre group in the Skibbereen and Dunmanway districts, 6 out of 19 farms surveyed had a farm income cf over £400. The variation in incomes between farms in these two

* The minimum typical family farm labour employed on small farms is 1.5 labour units (farmer and wife part-time). At current wage rates this is worth £400; this minimum allows nothing for capital invested on the farm, or for the management put into running it.

•* The division was based on the level of family farm income per acre.

Rural Districts as shown in Appendix 11 was greater than in the more westerly group. Although the better physical and economic environment gives a much better opportunity for the very small farmer to make a reasonable livelihood, this environment is by no means uniform over these two Rural Districts.

The general pattern of results (Appendix 11) for farms of under 30 acres is similar to that found in the three more westerly Rural Districts, i.e. a relatively small difference between the family farm income per farm in the upper and middle farm income groups but a very much greater difference between the middle and lower groups. This was parallelled by the differences in the levels of output per farm, the lower income farms having a very low level of total output. These differences are not so pronounced when the figures are analysed per adjusted acre, but the fundamental difficulty of low outputs on the less prosperous farms still remains paramount. Output of £1*4 per adjusted acre in the uprer third of the sample consisted approximately of one-third each from dairying and pig production and one-third from all other products. A very similar -pattern of production can be seen in the middle income group. In the lower grqup on the other hand, the cattle enterprise assumes a greater relative importance and the pig enterprise produces only £30 per farm.

On the 0-30 acre farms in this area, those with higher incomes tend also to be those with higher costs (Appendix 11). In the upper and middle income groups purchased feedingstuffs is by far the most important single item of expenditure, accounting for almost two-thirds of total expenses in the upper group and over one-half in the middle group. In the lower income group, where total expenses are very small, the total purchased feed bill is very much smaller than in the other two groups. Of the other expenses, fertilisers and machinery are the largest single items of costs but on none of the farms of the sub-groups does the average exceed £2 per acre on either of these items.

Discussion on Economic Results on all Farms under 30 acres: The figures of family farm income given in their bulk above do not include a charge for the value of the labour of the farmer and his family which is put into the running of the farm. If such a charge is made at the standard wage rate

for agricultural labourers in the area, then only 6 out of the 43 farms in this 0-30 acre class realised a return to the management and capital invested by the farmer. This management and investment income is often taken as the test of the economic viability of a farming system and it ia of considerable significance, that only in the case of the upper third of farms under 30 acres in Skibbereen and Dunmanway, was the family income almost equal to the value of the family labour on the farm. In all the other sub-groups of farms of under 30 acres the value, at ourrent wage rates, of the labour put in by the farmer and his family was considerably in excess of the net income earned on the farm.

The significance of these results are more fully realised when it ia considered that over 4,000 out of the total 8,480 holdings in West Cork are under 30 acres (Table l). On only a proportion of these is agriculture the primary source of income, but many of the farms in the over 30 acre group have less than 30 adjusted acres of land, and therefore, would also fall in the lowest size group of the surveyed farms.

Income in the 30-50 acre Farm Group

Of 25 farms in the 30-50 acre group, 14 had incomes over £400 (of which 3 had incomes over £600) and 11 under £400 (of which 7 had incomes under £300). Those with incomes of £400 or over could be regarded as viable units. Average farm income per acre in the 30-50 acre group was just over £10 for the whole survey sample. Although output per acre in the SkLbbereen-Dunmanway area was £4. per acre higher than in the Schull area, net expenses were also higher by a similar amount Most of this higher output in the former areas was due to the greater importance of pigs on these farms which, however, was associated with a considerably larger expenditure on feedingstuffs on the farms concerned.

Castletown-Bantry-Schull area; Within the Castletown-Bantry-Schull area (Appendix Hi) the upper income farms in the 30-50 acre group had an output of £24 Per acre compared with outputs of £19 per acre on the middle group of farms and £10 per acre on the lower income farms. The most significant difference in the farm production was in the pig enterprise, the average output of which was nearly £300 per farm on the better farms compared with almost £200 on the middle income farms and only £21 on the

poorer farms. The other really outstanding difference was in the level of output in the dairying and cattle enterprises which had a oombined output of over £500 on the best farms, over £400 on the medium farms but only slightly over £200 on the poorest farms. The upper and middle income groups have approximately the same level of expenses of about £9 per acre but the lower income group had an expenditure of only half this amount.

Skibbereen-Dunmanway area: On the farms of 30-50 acres in the Skibbereen-Dunmanway areas (Appendix IV) the family farm inoome per acre on the upper third was well over double that of the lower third. This was associated with a much higher level of output of over £35 per acre on the better farms compared with just under £12 per acre on the poorer farms. On the better farms the output from the pig enterprise alone was greater than the total output of the poorer ones and once more it was the relative contribution of the pig enterprise which accounted for much of the difference in the economic performance of the farms within this 30-50 acre group. On these farms however, there was also a much wider spread of expenses. These were nearly £20 per acre on the better farms, nearly £10 per acre on the middle income farms and £5 per acre on the poorer farms (expenditure on feedingstuffa being £14, £6 and £1#5 per acre respectively).

Income in the over 50 acre Farm Group>

In the group of farms of over 50 acres, although average farm income (Table IV) would seem to show that these are economically viable, in fact half the 24 farms of 50-100 acres had farm incomes of under £400. The 6 farms of over 100 adjusted acres all had incomes of over £600, and these were clearly the most prosperous farms in the sample,

Skibbereen-Dunmanway area; The farms of over 50 acres in the Skibbereen-Dunmanway survey sample had average incomes of over £800 and the income per acre was slightly higher than that of the farms of 30-50 acres in the sample in the same area. The average output per acre in this group was just over £24 and whilst it was still almost entirely based on the pig, cattle and dairy enterprises, the pig enterprise was of somewhat smaller relative importance (Appendix V).

It is against the trend of normal farm management results to find that the average expenditure per acre was as high on the farms of this largest size farm group as on the smaller sized ones. This is due primarily to the greater outlay on machinery and hired labour on these holdings. At the same time the pattern of results of the sub-groups within this greater than 50 acre group was very similar to that discussed earlier for the farms in the smaller size categories - the higher income farms having much bigger pig enterprises and to a lesser extent bigger dairy production per acre. Even in these larger farms, however, those in the poorest third of the income sub-groups earned very low returns on capital and management invested.

Castletown-Bantry-Schull area; In the poorer districts of Castletown-Bantry-Schull (Appendix *71*) the family farm incomes per acre on the farms of over 50 acres was considerably below that in the eastern part of the survey region (Appendix V). The average family income per farm in the sample surveyed in this group for these three areas was just under £509, from an average output of £1,019. Again, however, the main enterprises were dairy, pigs and cattle, the average contribution from sheep being only £69 output per farm in an area where sheep would seem to be an important enterprise. For this group as a whole the average farm income only just equalled the value of the labour of the farmer and his family.

However, expenses per acrw in this group were low, end the average expenditure on purchased feedingstuffs per acre was lower than in any other farm group. Even within this group there was a wide range in the incomes and outputs on the different farms. The average income *of* the upper third of farms was nearly £900 compared with £235 for the lower income third; outputs per farm were £1,630 and £640 respectively. In this group the pig enterprise was still of considerable importance in accounting for the different levels of income, but there were also greater differentials in output in the cattle enterprise and, to a lesser extent, in dairy production. On these farms the net expenses per acre on the middle and lower income farms were about £5. It was double this on the higher income farms. These higher expenses on the better farms occur mainly in the feedingstuffs, fertilisers, labour and machinery categories.

Farm Productivity

Undoubtedly the most important cause of the poor returns on the low income farms was their very low level of production. In the smallest acreage group only 14 out of the A-3 farms had a total output of over £tf00- the great majority of the farms would not have reached a viable income (as defined above) if they had incurred no expenses whatsoever in running their farms. The average output per adjusted acre on these farms is £28.7 in Skibbereen, Dunmanway and £18.6 in Castletown, Bantry and Schull; this level of production per acre is totally inadequate, given the amount of land available, to produce a satisfactory income.

The conventional ways of achieving an adequate output on small farms - through non-land using enterprises (pigs, poultry etc.) - has made virtually no impression at all on the small farms in the western part of the area. The average output of pigs and poultry is only about £50 per farm on the under 30 acre farms in the sample of farms in Castletown, Bantry and Schull, compared with nearly £200 per farm on comparable sized farms in the Skibbereen and Dunmanway sample (Table XVI). A similar though somewhat smaller difference exists for milk production per farm between these districts whilst the output of the extensive enterprises (cattle and sheep) is broadly similar in the two regions. The same trend is apparent in the larger farms, but the differences are generally not so marked (Table XVI).

Farm Stocking Rates

The size of the farm business was reflected in the stocking rates on the farms, the smaller farms and those in the better eastern part of the survey region being the more heavily stocked (Appendices 1 - VI). The general stocking pattern on the farms under 30 acres consisted of 5 cows and 5 other cattle, just under 1 sow per farm with an average of if fattening pig3 in the eastern districts and a few 3heep on the farms in the western districts, but virtually no pigs. The average number of poultry was about 20 per farm, and few of the poultry enterprises produced ca3h sales of any economic importance.

On the farms of 30-50 acres, 8-9 cons and *a.* slightly larger number of followers were generally carried, together with a sheep flock of under 10 animals and with 1 sow and 9 smaller pigs in the two eastern districts but only an average of 0.5 sows and 5 smaller pigs in the western districts. On the farms of over 50 acres the stocking with cows and other cattle was appreciably heavier in the Skibbereen and Dunmanway districts, and the sheep numbers were heavier in Schull-Bantry-Castletown. The pig enterprises were similar to those on the 30-50 acre farms except that the importance of breeding-sows in the pig enterprise was much greater. Practically all the farms in the survey carried a horse, irrespective of farm size.

The outstanding economic factors in the livestock enterprises were the relatively low numbers of stock carried per farm and the low levels of output per unit of livestock (Table XVlll). Only in one of the 6

TABT.K XV111; Milk Yields and Stocking Rates

Area	Farm size adjusted acres	Adjusted acre per livestock unit	Milk yield per cow gals.
Skibbereen-Dunmanway	0-30	**1.6**	4^0
	30-50	**2.2**	459
	50 +	**2.2**	530
Castietown-Bantry-Schull	0-30	1.9	399
	30-50	2.4	434
	50 +	2.4	439

major groups viz. farms of 50 acres and over in the Skibbereen-Dunmanway area was the milk yield per cow above 500 gallons, and generally yields tended to be lower on the smaller farms. This problem of low livestock output can be seen in the output from sheep on the larger farms in the Castletown-Bantry-Schull area (the only farms with important sheep enterprises). Although the average number of sheep over 1 year old carried per farm was 48, the total output from these animals was only £69.

Cropping Patterns

The typical cropping pattern on the survey farms wa3 that well over two-thirds of the farm was under grassland, of which about one-quarter was made into hay. The cropping on the remainder of the farm consisted of a small area of oats and barley (of which oats was the more important), from one-half to one acre of potatoes for the farm family, and generally an acre or so of feed roots. Other crops were of little significance.

The importance of the economic environment can be clearly seen from this comparison of outputs per farm in the two areas. As the pigs and poultry enterprises were almost entirely dependent on the supply of purchased feedingstuffs the quality of the land was of little importance. Supplies of skim milk are available in both areas, but the farmers nearer the markets made much better use of their opportunities for production from the more intensive enterprises.

Part-time Holdings

In addition to the examination of the farm business of the farms discussed above, a survey was made on a small number of holdings of under 15 acres. Altogether V7 holdings were surveyed, but none of these were farms in the sense that they provided the main source of income for the people living on them. ILost of the holdings were very small, 38 of them being under 10 acres. With four exceptions, the primary purpose to which the land was put was that of providing farm produce for consumption in the house.

The main crops grown were oats and potatoes, the former for feeding to livestock on the holding and the latter for household consumption. Fourteen holdings had no tillage at all. The most important livestock carried in nearly all caseswere dairy cows but even in this case the number was usually only one or two cows. In addition a small number of younger cattle was common, the most common being under one-year old. Sheep were carried in only three cases and pigs in only two. On approximately half the holdings a small number of hens were kept but they exceeded twenty in only two cases.

Returns from the sale of farm products exceeded £100 on only four of the holdings and generally they were very 3mall. At the same time the expenditure on these holdings was also small, less than one-third using any fertiliser or seeds and the same number purchasing feeding-stuffs in any quantity. In the majority of cases no farm machinery was used at all. The labour was almost entirely family labour, in most cases it being spare-time after working in some other occupations.

Thus the picture by this random, sample of V7 holdings of under 15 acres is one of part-time farming on a very small scale. The land produces very little apart from food consumed in the house without process of sale, and in many cases provides grazing for a very small number of livestock. It would appear, therefore, that the contribution of these small holdings to the agricultural output of West Cork is negligible; the existence of these separate pieces of land in individual ownership is a consequence of hereditary rather, than the result of the working of current economic processes.

Conclusions

There are two outstanding impressions to be gained from the economic position of the farms of West Cork. In the first place there is a very considerable degree of variation of financial returns from the farms in the area; in the second place there is a very high proportion of farms below the level of economic viability. It seems most unlikely that any feasible scheme of development would turn the great majority of the unviable holdings into strong economic units. A large number of these farms, therefore, appear likely to lose their separate economic identity as business units with the death or retirement of the present occupiers. The more prosperous units seem well able to overcome the inevitable economic hazards in farming. There remains a marginal group, generally with current farm incomes of £300-£U00, and it is on the future of these that much of the overall development of the agriculture of West Cork depends*

DEMOGRAPHIC AND SOCIOLCGIC-JL ASPECTS CF V/5ST CORK

Introduction

As part of the Resource Survey carried out in the West Cork region by An Foras Taluntais a pilot demographic and sociological survey of the area was undertaken. There were a number of considerations which gave rise to the latter study. First, it was recognised that a programme of resource development in any area was much dependent on the composition and characteristics of its human population. In this respect such factors as population size and density, age distribution and the extent of migration are of particular importance. Accordingly, the project in West Cork required that a survey of local demographic conditions be made in addition to the assessment of physical and economic resources in the area. Second, the official report of almost every Census of Population shows the changes in the population numbers of counties for the preceding hundred years. No corresponding data are available for administrative areas of les3 than county size as the information on population changes in such units is limited in each Census Report to the particular intercensal period under review. It was reasoned that statistics of long-term population trends on a county basi3 did not reveal sufficiently the extent of changes occurring in the numbers of inhabitants of smaller and entirely rural areas.

As population decline was known to be heavy in West Cork it seemed iesirable to examine this view in relation to the Survey area and to find out the extent to which the present decline was affected by the relative rates of births and deaths on the one hand and by migration on the other. Third, although social factors are constituent elements in the problems of many rural areas in this country there is a lack of accurate information on the sociological aspects of life in our rural communities. Empirical social studies, integrated with the contributions from other sciences, are needed to provide data for a better understanding of the situations where the promotion of rural welfare is being planned. The study in West Cork was an effort in fulfilling the need in relation to this area. To help in establishing the

more worthwhile lines of enquiry in future rural sociological surveys, a number of different topics were examined. Factors considered to be of significance were the household and family circumstances of t he inhabitants, the migratory patterns of those who leave the area, the dwellinghouses, education and readership, and the use of amenities and services.

The Survey Area

The region covered by the present Survey coincides with that outlined in the introductory section of the main report (PageA-2). It was confined to the area comprising the five Superintendent Registrars' Districts of Dunmanway, Skibbereen, Schull, Bantry and Castletown. These correspond to each of five Rural Districts, except Skibbereen which is composed of an Urban and Rural District. In the Census enumerations each Superintendent Registrar's District is divided into Registrars'Districts which are identical in area with the Dispensary Districts. There were fifteen Dispensary Districts in the area covered by this Survey.

The physio graphical features vary considerably within the area and make rapid changes in a complex landscape. A large proportion of the land falls into the rough grazing category, the extreme west being almost a mountain range. Small holdings predominate and the general pattern of farming is one of mired agriculture with strong emphasis on dairying.

The largest towns are Bantry and Skibbereen with 2,000 persons each. Dunmanway (1,500 persons), and Castletownbere (720 persons) are next in size of population. There are 18 smaller towns and villages with populations ranging from 400 down to 70 inhabitants. Taking the Census definition of a town (i.e. a cluster of 20 houses or more), approximately one-fourth of the people in the Survey are living in such communities. The remainder are dispersed with varying densities in rural parishes. In 1956 the number of persons per 100 acres for the area surveyed was 8.3 as compared with 15.6 in the rest of the County, excluding the City. The population density for the whole County and City combined was 18.3 persons per 100 acres.

Sources of Data and Survey Method

The Survey was undertaken in two stages corresponding in general to Parts 1 and 11 of this report. Documentary sources containing information on the area's demographic features were first studied after which a number of sociological aspects were selected for field investigation.

Documentary Sources: Analysis of population trends in the Survey area was made from statistics published in the Censuses of Population. Changes in the population numbers of the total area in each intercensal period since 1861 were examined, also the changes which occurred at Dispensary District level since 1901. Comparisons were made in both cases with other selected areas.

At the time of the Survey the returns from the 1961 Census had not been fully compiled and as the 195o Census had recorded population numbers only, the latest published source of detailed demographic information was, therefore, the Census Report of 1951. Data on the structure of the present population in the Survey area were derived from this last source. Additional data were obtained from the local Registers of Births, Marriages and Deaths.

Field Sources: The social study was based mainly on field enquiries conducted among random samples taken from each of three categories of householder, i.e. 100 farmers, 50 smallholders, and 50 of those resident in the towns. The farmers chosen were also participants in the Farm Management Survey undertaken in connection with the West Cork project. Smallholders were taken to be those with less than 10 acres while in the case of towndwellers the Census definition of a town (a cluster of 20 houses or more) was adopted.

A schedule of questions was drafted, pre-tested and a final form of questionnaire devised. This questionnaire was then introduced to the selected householders by personal interview. In some respects the information supplied by the persons interviewed was supnlemented by that obtained through the co-operation of local authorities and organisations.

Field work was carried out during the winter of 1961-62 by the writer and two recorders working under his direction.

PART 1 - DEMCGR/PKIC ASPECTS OF TH5 SURVEY AREA

Population Trends

The main features of Irish demographic history will be summarised briefly before the population trends in the West Cork region are examined. Por the Twenty-Six Counties at present forming the Republic, six distinct phases can be outlined:-

(i) 1780-1845: In this period, the rate of population increase rose rapidly until it corresponded to that in other European countries. This occurred even though emigration had attained considerable volume before the end of the period. In 1&V1, there were someuhat over6.5 million people in the Twenty-Six Counties.

(ii) 1845-1881: After the Famine of 1845-47, decline was so rapid that by 1861 the population was about 4.4 millions. The rate of decrease gradually diminished up to 1881.

(iii) 1881-1911: Population decline accelerated again during the decade following the disastrous crop failures of 1879-80. From 1891-1911, the decline continued, but with lessening intensity.

(iv) 1911-1926: A decline of slightly greater magnitude took place during this period, probably due to World War 1 and political unsettlement at home.

(v) 1926-1951: After the 1926 Census, the population of the Twenty-Six Counties achieved a measure of stability at around 3 millions, while the intercensal period, 1946-51, showed an increase of 0.19 per cent in population.

(vi) 1951-1961: The population showed a drop of 2.1 percent from 1951 to 1956 and this rate of decline has been exceeded in the period 1956-61.

In almost a oentury (1861-1956) the population of the Twenty-Six Counties declined by 1.5 million, (36 percent), while that of other estorn European countries increased. Decline wa3 greater in the rural population^ ' which dropped from 3«5 to 1.6 million. Urban population^ ' on the other hand rose from .9 to 1.3 million.

Population Trends in West Cork

The fifteen Dispensary Districts, their respective populations in 1956* and the 1956 population as a percentage of the 1861 population, are shown in Pig. 1. It will be noted that depopulation has occurred in all areas, being greatest in the penninsular and coastal Districts; Kilcatherino, Durrus and Kilcrohane, Goleen, Schull and Tullagh have each less than 40 percent of their populations of one huijdred years ago.

Changes in the total population of West Cork in comparison with other selected areas are shown in Table 1 and represented graphically in Pig. 2. Por the area comprising the five Superintendent Registrars * Districts, Bantry, Castletown, Schull, Skibbereen and Dunamnway the 186*1 Census recorded 94,700 people compared with 33,400 in the 1961 Census, a decrease of 59 per cent. In the thirty years between 1926 and 1956 the total national decline was relatively low at 2.5 percent although rural population declined by 20.5 percent. During the same period, however, the population of West Cork declined by 30 percent, and that of the rest of the County (excluding the City) by 5.5 percent. The Dispensary Districts which suffered heavy proportionate losses from 1926 to 1956 were KilCatherine (43 percent), Tullagh (40 percent), Castletown (33 percent), Durrus (38 percent), Goleen (37 percent), and Schull (35 percent). The 1961 Census showed that in Cork City and County there were 35,600 fewer people than in 1926, West Cork accounting for 20,80C (58 percent) of these. This latter figure represented a loss cf 35 percent of the population in the Survey area while during the same period (1926-1961) the decline in the rest of the County (excluding the City) was 6.3 percent.

(1) Population outside of towns having 1,500 or more persons

(2) Towns with populations of 1,500 or more persons

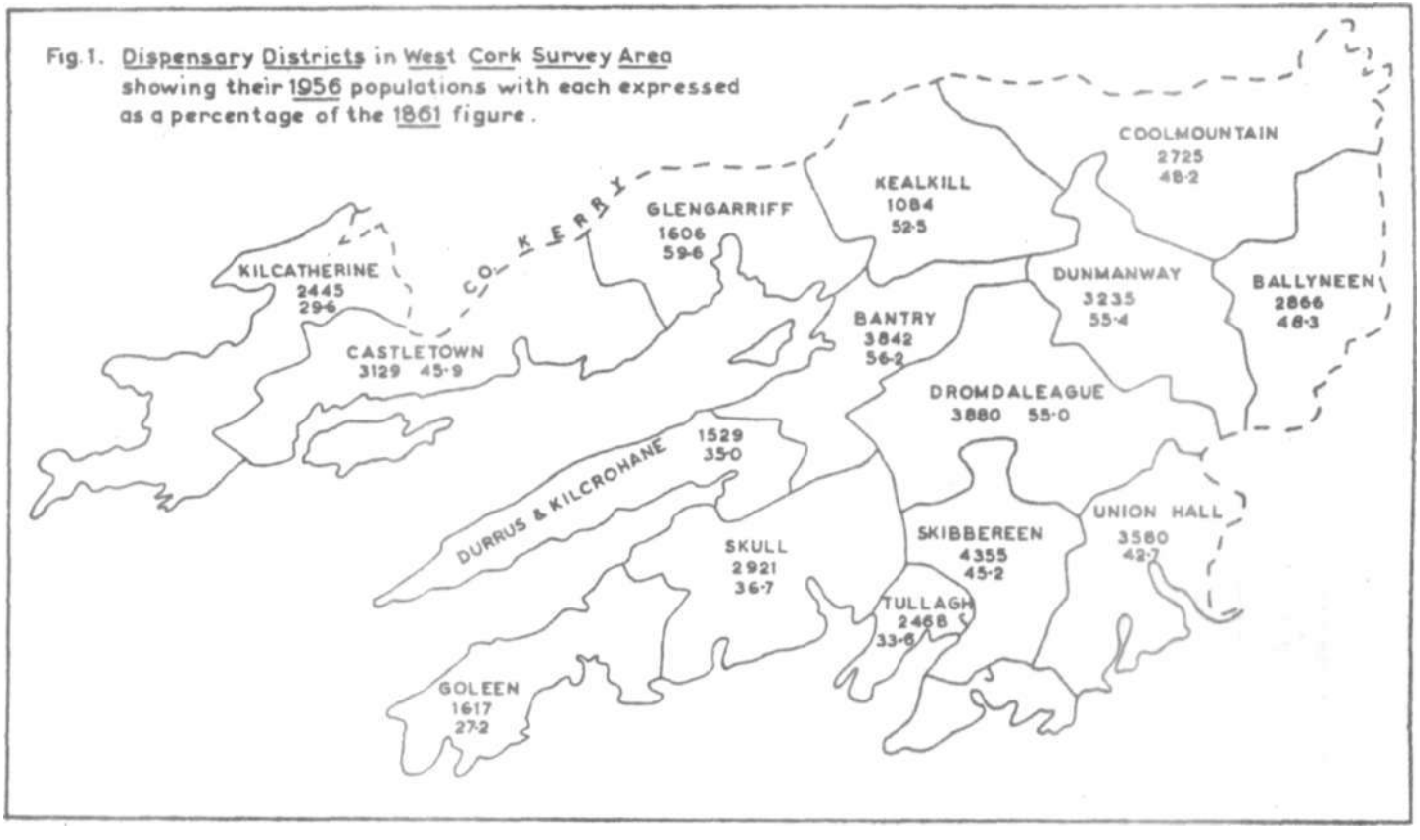


Fig. 1. Dispensary Districts in West Cork Survey Area showing their 1956 populations with each expressed as a percentage of the 1861 figure.
CO. KERRY
KILCATHERINE
2445
29·6
CASTLETOWN
3129 45·9
GLENGARRIFF
1606
59·6
KEALKILL
1084
52·5
COOLMOUNTAIN
2725
48·2
DUNMANWAY
3235
55·4
BALLYNEEN
2866
48·3
BANTRY
3842
56·2
DROMDALEAGUE
3880 55·0
DURRUS & KILCROHANE
1529
35·0
SKULL
2921
36·7
SKIBBEREEN
4355
45·2
UNION HALL
3580
42·7
TULLAGH
2468
33·6
GOLEEN
1617
27·2

TABLE I

PERCENTAGE POPULATION DECREASE IN SELECTED AREAS 1661 1961

AREA	Intercensal Period											
	1861-71	'71-'81	'81-'91	'91-1901	'01-'ll	'11-'26	•26-36	'36-'46	•46-'51	•51-'56	'56-'61	1926-1961
West Cork[1]	2.0	1.0	10.6	10.7	8.0	U.4	10.7	10.4	6.5	6.7	6.9	35.0
Rest of Cork County (excluding Cork City)	6.6	6.4	13.2	9.2	2.8	7.9	2.5	0.7	3.0	*0.6[2]	0.7	6.3
Aggregate Rural Araaa in twenty-aix oounties	10.0	6.3	13.6	10.7	5.2	9.5	6.0	3.7	6.0	6.9	4	.4
Twenty-six counties (at present forming the Republic)	8.0	4.5	10.4	7.1	2.5	5.3	0.1	0.45	• 0.19[2]	2.1	2.9	5.3

(1) "West Cork" comprises the five Superintendent Registrars' Districts, Bantry, Sohull, Castletown, Skibbereen and Dunmanway. These correspond to each of five Rural Dlatrlots (exoept Skibbereen which is oomposed of an Urban and Rural Diatrict). Each SRD is divided Into Dispensary Dlatrlota

(2) Inorease

SOURCE, Cenaus Reports

(3) "Rural Areas" refer to all areas outside of towns having 1,500 or more persona. Two towns with populations over 1,500 in 1956 (Bantry 2,211 and Skibbereen 2,202 persons) are Included in the Survey area figures. The percentages given for "Aggregate rural areas in 26 oounties" are calculated on the population figures of rural areas as constituted at the respective censuses. These figures, therefore, relate to areas not strictly comparable over the whole period

(4) Figuree for 1961 Aggregate Rural areas not yet available

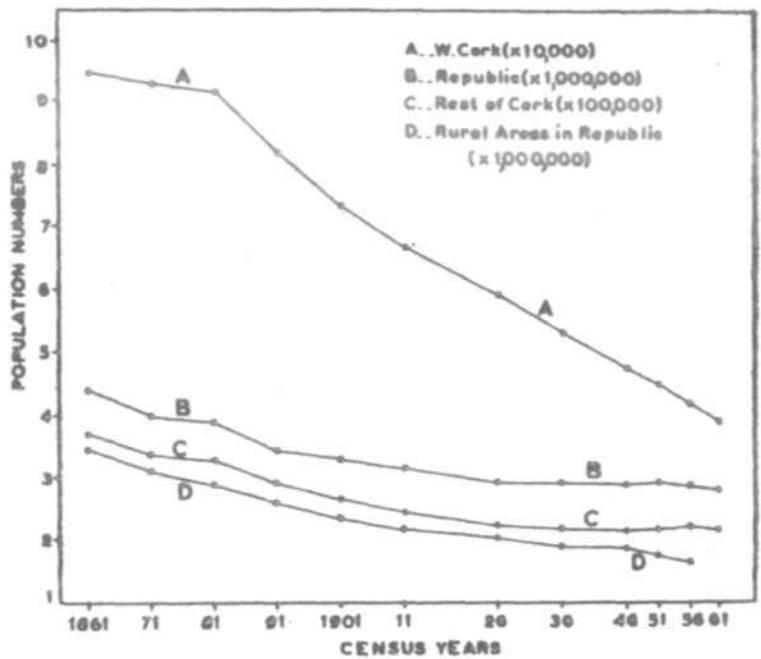


Fig. 2: Population Trends 1861-1961

Details of recent population trends based on the latest published statistics are given in Table 11. It is apparent that depopulation continues in all five Superintendent Registrars[1] Districts of 'Jest Cork. From 1951 to 1956 the number of people in the Survey area deolined by 6.7 percent compared with a deoreaae of 1«8 percent in the population of the aggregate rural areas in the rest of Cork County. For the same years (1951-1956) total rural population in the whole County fell by 2.9 percent. The population decline in the Survey area was somewhat similar to that in the rural populations of Connacht and the part of Ulster in the Republic.

TABLE 0

POPULATION DECREASE IN THE SURVEY AREA (1951 - 1961) COMPARED WITH DECREASE IN AGGREGATE RURAL POPULATIONS OF SELECTED AREAS (1951 - 1961)

AREA	PERSONS		DECREASE PER CENT	
	1956	1961	1051 - '6	1956 - '61
WEST CORK SURVEY AREA	41,282	38.445	6.7	6.9
SUPERINTENDENT REGISTRARS' DISTRICTS:				
CASTLETOWN	5.574	5,064	6.1	9.1
BANTRY	8,061	7.814	5.9	3.1
SCHULL	4.538	4.116	10.0	9.3
SKIBBEREEN	14.283	13.168	7.3	7.7
DUNMANWAY	8.826	8,283	5.2	6.2
AGGREGATE RURAL AREAS IN:				
REST OF CO. CORK	137.773	•	1.8	•
TOTAL OF CO. CORK	174,642	•	2.9	•
26 COUNTIES	1.613.285	•	4.4 1	•
PROVINCES:				
LEINSTER	484,153	•	2.3	•
MUNSTER	544,654	•	4.0	•
CONNACHT	375,931	•	6.0	•
ULSTER (PART OF)	208.547	•	7.4	•

SOURCE: Census Reports

* Figure* not yet available

1 The percentages given are calculated on the population figure* of rural areas in 1951 and 1956 as these areas were constituted at the 1956 Census The percentages therefore relate to identical areas .

During the last intercensal period (1956-1961) the number of people in West Cork declined by 6.9 percent. The significance of recent trends in the area's population is better understood by examining the total decline over the past ten years. Between 1951 and 1961 total population dropped from 44,257 persons to 38,2*45 persons, a decrease of 13.1 percent. This was the area's greatest percentage decline for any intercensal decade in the past hundred years.

The loss of population in all Dispensary Districts of the Survey crea has been relatively greater than the decline in the whole of Cork County (including City), (Table 111). To facilitate comparison between intercensal periods of varying length the decrease in the population of the Dispensary Districts of West Cork and selected areas is expressed in annual numbers (or rates) per 1,000 of their total population. Prom 1901 to 1926 the rates of depopulation in the total Survey area were less than three times the County rate, and in some Dispensary Districts the rate did not reach the County figure. After 1926, however, the discrepancy became greater between the rates of decline in the Survey area and those of the County, the rate in the former being almost ten times that *of* the latter in 1946-51. In the intercensal periods between 1926 and 1956 the rates of depopulation in each Dispensary District of the Survey area were greater than the rates for the whole County, or those for the province of Kunster. Kilcatherine and Tullagh Dispensary Districts showed a rate of approximately twenty times the County figure during the intercensal period 1946-51.

TABLE 111: Rates of population decline[1] in Dispensary Districts, and selected areas, 1901-1956

Dispensary Distriot or Area	Intercensal Period 1901-11	'11-26	'26-36	'36-46	'46-51	'51-56
Dispensary District						
Castletown	12.2	3.9	15.4	16.2	23.6	9.4
KilCatherine	1.7	10.4	20.6	12.8	29.0	16.7
Bantry	2.6	8.9	5.3	10.5	10.3	8.9
Durrus and Kilcrohane	14.5	8.2	15.6	15.5	17.5	15.1
Glengariff	0.9	6.9	5.0	14.4	16.3	10.2
Kealkilla	'6.0	5.2	17.3	10.0	11.3	21.8
Goleen	21.0	14.4	11.0	15.6	15.3	24.4
Schull	14.5	12.9	11.3	13.1	17.8	19.0
Driraoleague	5.7	7.7	9.8	7.3	11.0	10.7
Skibbereen	8.4	8.9	5.8	8.5	4.8	15.9
Tullagh	11.6	13.7	14.1	13.8	26.1	22.4
Union Hall	3.0	12.1	13.8	11.6	10.2	13.9
Dunmanway	10.4	7.5	7.1	7.0	9.1	11.7
Coolmountain	5.9	3.9	14.1	9.6	4.6	12.0
Ballineen	7.8	3.8	7.6	5.1	*6.6*	*S.6*
Area						
West Cork Survey area	8.3	8.8	11.3	11.0	13.5[3]	13.9,,
Rest of County (excluding City)	2.9	5.6	*2.6*	0.7	6.0[3]	+1.1
Total County Cork (inoluding City)	3.1	4.4	2.7	3.5	1.4	2.7
Munster	3.9	4.4	2.9	2.7	4.1	4.9

\") Average annual deoline per 1,000 of the arithmetic average of the population in oonseoutive Census years.
(2) Increase.

^' Based on the oopulation figures of an area identical with the smaller County area whioh was oreated when the Co. Borough boundary was extended after 1951.

Source: Census Reports

Y&th the exception of Bantry, population decline in the Dispensary Districts was greatest between 1946 and 1956.

At the time of the Survey the published returns from the 1961 Census of Population were not available for the individual Dispensary Districts. However, provisional figures for 1956-61 isotfoc! by the Census showed a rate of population decrease of 14.2 in the Survey area compared with a rate of 3.9 in the whole County (including the City).

Increasing Rate3 of Population Decline

It was noted in Table 111 ajad in the foregoing paragraph, that, for the total Survey area depopulation rates increased ±*n* successive intercensal periods (with the exception of the years 1936 to 1946). The los3 of population in West Cork in 1956-61 was proportionately greater than at any time in the present century. This is borne out further by the figures in Table IV.

TABLE IV: Average annual population decline in Survey area 1901-1961.

Intercensal period	Population decline	Average annual decline
1901 - 11	5,876	587
1911 - *26*	8,341	555
1926 - 36	6,313	631
1936 - 46	5,516	551
1946 - 51	3,091	618
1951-56	2,975	595
1956-61	2,837	567

Survey Area Population: 1901 - 73,394 Souroe. Cen3US

It will be seen that while the population of the Survey area is falling, the average decline per year, in absolute figures, is fairly constant.

Elements in the Population Changes of Wc3t Cork

There are three elements in population change, i.e. the number of births, the number of deaths and tha volume of emigration and immigration. Migration from the Survey area is dealt with in detail- in Part 11 of this study. In the present context it is sufficient to show the changes in the relative importcjice of the factors contributing to depopulation over a fifty-year interval. For this purpose data relating to the intercensal periods 1901-1911 and 1951-19^1 are compared in Table V.

TA3L5 V: Elements in the population changes of West Cork (1901-11 and 1951-61)

Intercensal period	Births	Deaths	Natural increase* -decrease-	Decline in population	Estimated net emigration
	Numbers				
1901-11	15,945	9,501	+6,444	5,876	12,320
1951-61	5,023[1]	5,135	- 112	5,812	5,700
	Annual Average Rates per 1,000 of Average Population[2]				
1901-11	22.6	13.5	9.2	8.3	17.5
1951-61	12.1	12.4	-0.3	14.1	13.8

1 Estimated

2 Arithmetic average of population in consecutive census years

Source: Census Reports, ar.d Registers of Births and Deaths.

While net emigration from the Survey area during 1901-11 was high at an annual rate of 17.5 persons per 1,C00 of the average population, its effect on the population level was counterbalanced to a considerable extent by the natural increase (births less deaths). The net emigration rate in the decade ending 1961 was lov.er at 13.8 but in the absence of any simultaneous natural increase the rate of population decline was 14.1 in comparison with the rate of 8.3 in 1901-1911. It is likely that this situation has parallels in other rural areas.

POPULATION STRUCTURE

Age and Sex Composition

Among the factors which influence the vitality of a community are its age composition and sex composition. The social attitudes and behaviour of the community, its degree of initiative or conservatism, the nature of the market for goods and services, and the use or redundancy of past investments, will differ with variations in the age and sex composition of the population. Age and sex structure influence the marriage pattern, and also the burden of dependency which is carried by the active section of the community.

Age Composition: The distribution of population by certain age groups in the Survey area in the years 1911 and 1951 is shown in Pig. 3 which reveals a noticeable change in the structure of the 1951 population. There is an obvious shrinkage in the proportions in the age groups under 30 years. The contrary is true for those age groups over 35, the percentage of people in each group having increased since 1911. In particular there is a heavy concentration of those pver 45 years. Table VI indicates that 3^.5 percent of the Survey area's population were in this age bracket, compared with 24.5 percent in 1911. The present high proportion of elderly people consists of survivors from periods when birth numbers were greater than those? of recent

TABLE VI; Age distribution of West Cork population 1911 and 1951.

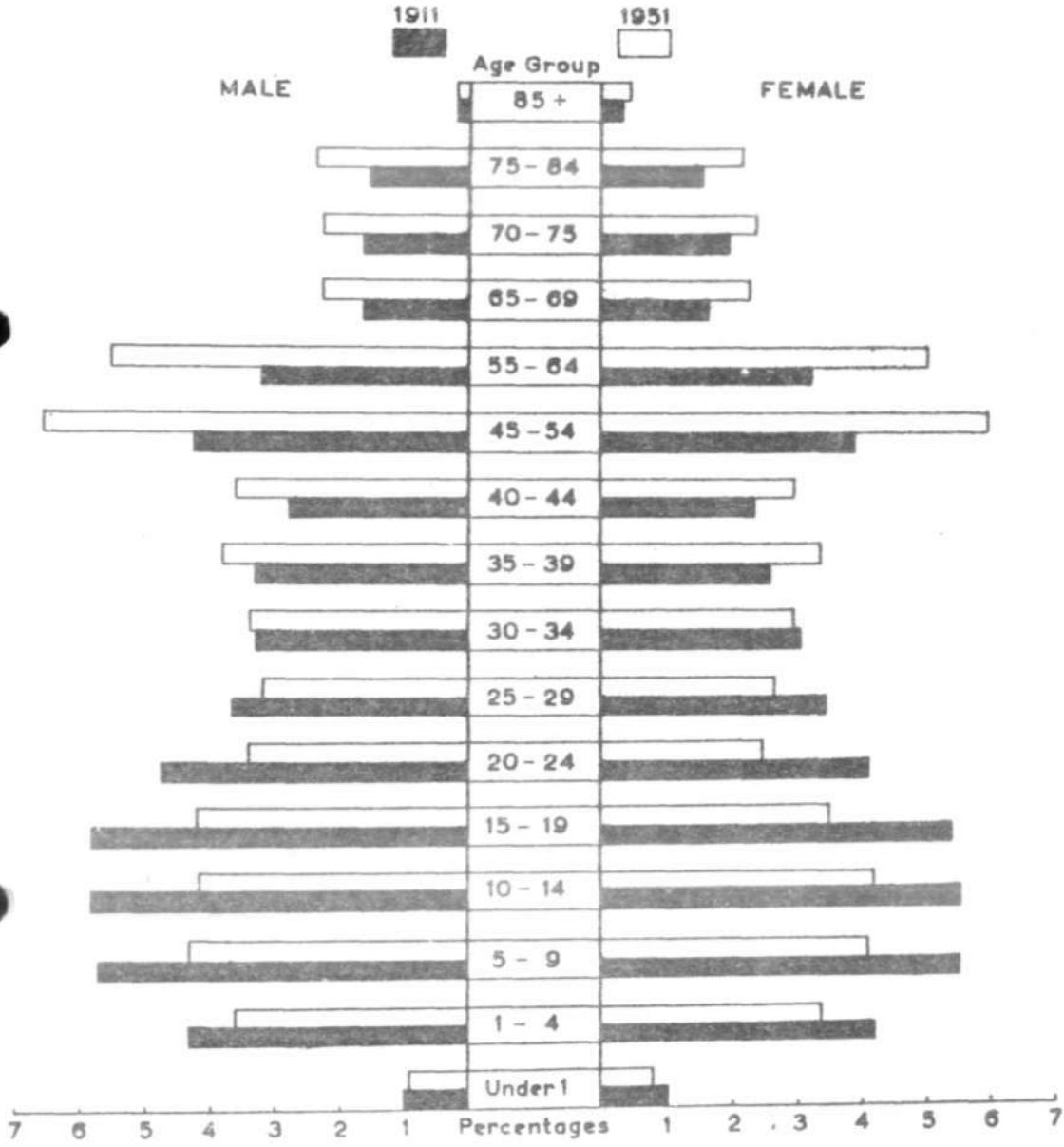
Tear	Per cent in age group			
	0-14	15-44	45-64	Over 65
1911	32.2	43.2	14.2	10.3
1951	25.0	38.5	22.5	14.0

Source: Census Reports

years. In addition heavy emigration continues in the young adult groups.

The age structure in West Cork and comparative percentages for other areas is presented in Table Vll. It will be noted that the proportions in the ttoti.^

FIG.3. Distribution of Population by Age Groups in Survey area, 1911 and 1951.



section of the community (15-64 years) and in the dependent section (0-14 and over 65) are very similar to those in the whole country.

TA3LS Vll: Age structure in Survey and selected areas 1951.

	Per cent in age group				Dependents	Active'
	0-14	15-44	45-64	Over 65	per cent of total	
West Cork	25.0	38.5	22.5	14.0	39.0	61.0
Co. Cork urban areas	27.8	41.6	20.2	10.4	38.2	61.8
Total rural areas of Republic	28.6	38.8	20.2	12.4	41.0	59.0
Dublin Co. Borough	27.9	46.0	18.6	7.5	35.4	64.6
Republic	28.9	41.0	19.4	10.7	39.6	60.4

1 0-14 years and over 65 years. 2 15-64 years.
Source: Census Reports

Tno important factors nust be borne in mind in assessing these figures. The population of the Republic is an ageing one. In 1841 only 16 percent were aged 45 and over, and in 1951 the figure had risen to 30 percent. However, the percentages of rrorling and dependent people had not changed, being 60 and 40 percent respectively in both 1841 and 1951. Since then, there has been a considerable change in the relative importance of the two groups constituting the dependent section - those aged 0-14 and over 65. Between 1841 and 1951 Jic percentage of the population in the 0-14 bracket declined fron 58 to 29, while the proportion aged 65 and over increased from 3 percent to 10.7 percent.

By comparison with most European countries the Republic has at -resent a very low proportion in the 15-44 age group and a very high proportion in the group 65.years and over. These demographic features are even more pronounced in the Survey area, 14 percent of the population being over 65 years in 1951.

Sex Composition: The sex ratio (number of females per 1,000 males) is determined by the ratio 6f female to male births; by the differences of death

rates between the sexes; and by migration. At each Census since 1926 the Republic has had a deficit of fenales. In the long term the main determinant of the sex ratio in this country has been the natural increase, as net emigration among males and females has been almost equal. Migration within the country has certainly produced contrasts in sex structure in different areas (Table Vlll).

TA3LS Vlll: Females per 1,000 males in certain age groups in selected areas 1951.

Area	Age Groups				Sex Ratio all ages
	0-14	15-44	45-^4	65 and over	
West Cork	964	843	905	1,004	907.5
Co. Cork Rural areas (excluding West Cork)	945	822	889	922	880
Total Rural areas in Republic	947	803	863	910	867
Total Urban areas in Republic	977	1,161	1,163	1,385	1.119
Dublin Co. Borough	979	1,166	1,207	1,524	1,140

Source: Census of Population, 1951.

It will be observed that the surplus males in the Survey area reflects the general pattern of rural areas in Ireland. The figures show, however, that female to male ratio is a little higher than in the aggregate rural areas of the rest of County Cork and those of the Republic. West Cork and the rural areas outside it show a similarity in that the male excess is greatest in the 15-44 age sroup. To a considerable extent this is a result of the relatively greater migration of females in this age group from the rural areas.

In the 1961 Census the sex ratio in the Survey area was 909 females to 1,000 males. Each Rural District had a surplus of nrlbe, aut Skibbereen Urban District had 171 more females than males, thereby following the pattern of towns. The greater number of females in towns is a consequence of the migration of

females into towns rather than the result of any heavy male migration out of towns. The large number of male 'relatives assisting' who remain living on farms as members of the family is a factor (apart from migration) responsible for the low female-male ratio in rural areas.

Marital Status

The numbers married, widowed and single in certain age groups in the Survey area in 1951 are represented in Pig. if. According to the Census of that year 3k percent of males over 15 years (or 9,552 persons) and 39 percent of the females over 15 years (or 6,127 persons) were unmarried. These proportions are very similar to those in the rural areas of the rest of the County or the total rural areas of the Republic. But West Cork differs from both these groups of rural areas in having significantly higher percentages of males and females unmarried in the 25-3*4- age group. On aggregate, towns have lower proportions of single men and higher proportions of single women than rural areas.

The percentage single in the age group 55-&t- may be taken as an indication of the proportions who do not marry. In 1951 the percentage single in this age group in West Cork was 25 percent (28 percent of the males and 21 percent of the females). Thus, it may be generally stated that, from the number of persons living in the Survey area who had passed the normal marriage age, one person in every four had not married. This proportion was similar to the national figure for the 3ame year (195"0» In drawing this comparison (and those illustrated in Table IX) between West Cork and the Republic it must be borne in mind that this country has a poor marriage pattern by international standards. The percentages of young unmarried persons and of persons who never marry are very high while the marriage rate is one of the lowest in the world.

FIG.4. Distribution of Population by Age Groups in West Cork survey area. 1951

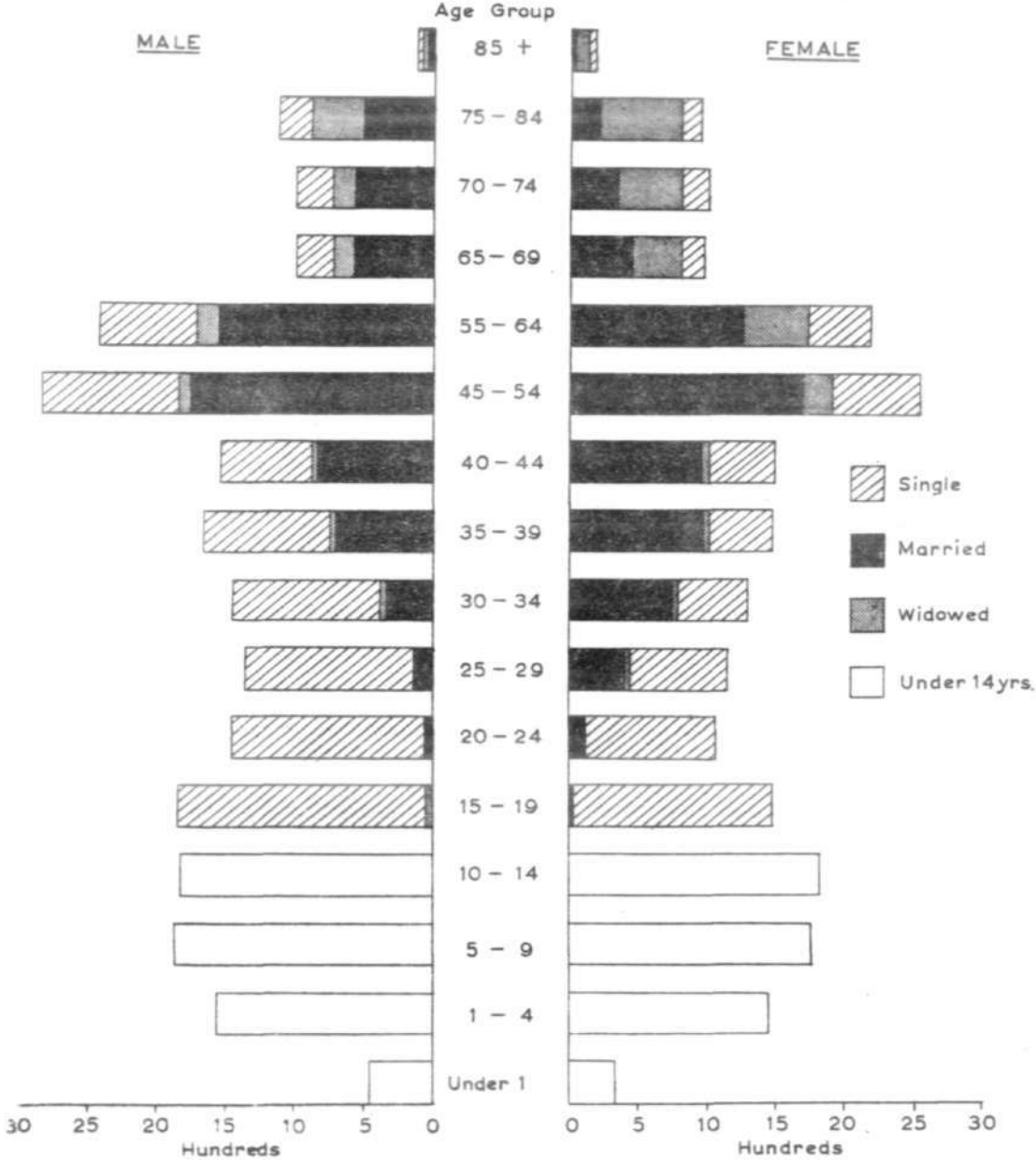


TABLE IX

Percentages of tingle sales and females in certAin age groups in aolected areas 1951

Area	Per cent single soles in age group (Tears)			
	25 - 34	33 and 44	45 and over	15 and over
Vest Cork	33.0	50.9	28.4	54.4
Rural areas, Co. Cork (excluding West Cork)	76.6	48.6	30A	55.0
Total rural areas in the Republio	76.0	48.5	32.1	55.8
Total urban areas in the Republic	55.0	27.1	22.2	it8.1
Republio	67.4	40,5	28.8	52.9
	Per osnt single females in age group			
Vest Cork	52.1	28.7	20.5	39.1
Rural areas, Co.Cork (excluding Vest Cork)	48.9	27.1	22.1	40.0
Total rural areas in the Republic	45.0	25.7	22.1	39.0
Total urban areas in the Republio	46.2	27.9	28.5	47.3
Republio	45.6	27.6	24.7	42.8

Source: Census Reports.

The number of single males and single females (age group 15-44) in the Survey area in 1951 are shov/i: in Table X. The total single women in this group numbered 4,518 compared v.ith 7,195 single mun, i.e. a ratio of 628 single women per 1,000 single men. Y/hen this group is divided into three constituent age groups (as shown in Table X) marked differences occur between the three groups in their ratios of single females to single males. In the age group 15-24 the ratio was 755 to 1,000; in the 25-34 group it was 549 to 1,000; and in the 35-44 group it was 496 to 1,000.

TA3LE X: Single males and single femdes (15-44 years) in West Cork, 1951.

Disstrict	15 - 24 years		25 - 34 years		35 - 44 years	
	Hale	Female	ilale	Female	Male	Female
Castletown Rural	451	332	244	113	208	85
Bantry n	598	454	415	250	298	184
Schull it	332	245	296	161	209	89
Dunmanway it	694	569	505	312	422	204
Skibbereen n	1,017	681	786	3^3	443	181
Skibberccn Urban	148	158	92	86	37	51
Total	3,240	2,439	2,338	1,285	11,617	754

Source: Census Reports

Marriage Rates: There were 1,161 marriages registered in the Survey area during the ten years ending March 31, 1961. This represented an annual marriage rate of 2.8 per 1,000 of the average population in this period. Between 1901 and 1911 marriages numbered 2,893 and the marriage rate was 4.1. The rate for the whole country in 1959 was 5.4.

Marriage rates for the Superintendent Registrars' Districts in the Survey area for the periods 1901-11 and 1951-61 are set out in Table XI. This indicates that since 1901-11 the marriage rate had declined in each of the five Superintendent Registrars' Districts. As in other population features Castletown cocpared unfavourably with the remaining Districts. Bantry and Schull however, hed better marriage rates than those of Skibbereen and

Dunoanway.

TABLE XI: Harriages in Survey area (1901-11 and 1951-61)

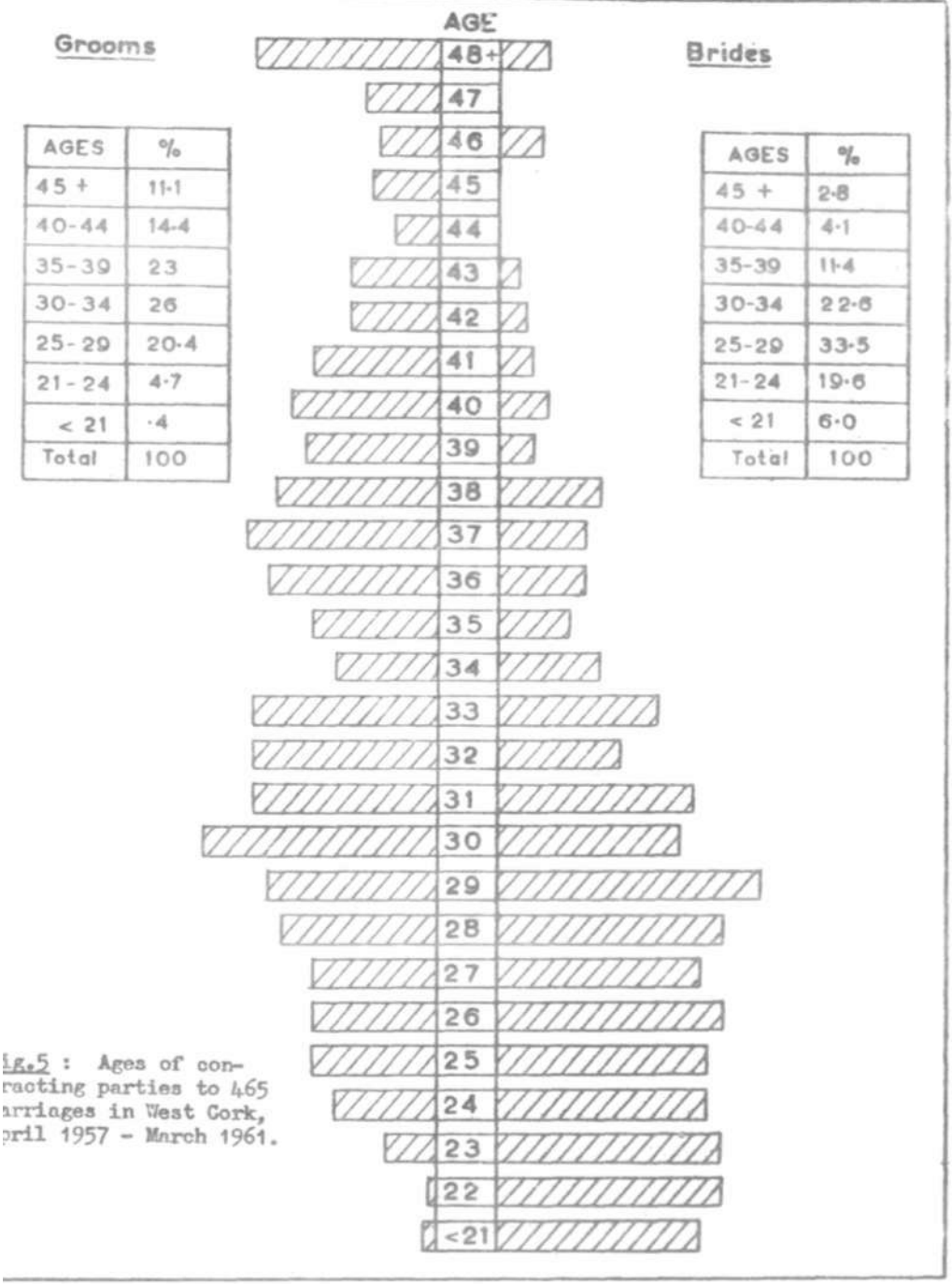
Superintendent Registrar's District	Average annual number of marriages per 1,000 of population	
	1901-11	1951-61
Castletown	4.2	2,1
Bantry	4.2	3.3
Schull	4.1	3-5
Skibbereen	4.3	2.6
Dunmanway	3.6	2.7
Survey area, Total	4.1	2.8

Source: Census Reports, and local Marriage Registers

Age at Marriage: The Marriage Registers of the Dispensary Distriota in the Survey area were consulted to ascertain the ages at which marriages take place. Particulars of ages of groom and bride did not become available from registration records until the form of registration was amended in 1957. Thus, a four year period beginning April 1, 1957, was chosen. During this period there were 465 marriages for each of which the dates of birth of both contracting parties were recorded. The data obtained are shown in Pig. 5.

Of the males marrying approximately one-quarter (25.5 percent) were under 30 years; a similar proportion were over 40, while almost half (49 percent) were between 30 and 39. The percentage of males who married at 45 and over was high (11.1 percent). The average age at marriage of all grooms was 35 compared with the national average-of 3L1 i** 1959.

The average marriage age of females was 29, i.«. 1.9 years higher than the corresponding figure for the Republic in 1959. About one-fourth (25.6 per oent) of the females were married before reaching 25 and almost three-fifths married before reaching 30.



AGES	%
45 +	11·1
40-44	14·4
35-39	23
30-34	26
25-29	20·4
21-24	4·7
< 21	·4
Total	100

AGES	%
45 +	2·8
40-44	4·1
35-39	11·4
30-34	22·6
25-29	33·5
21-24	19·6
< 21	6·0
Total	100

ig.5 : Ages of contracting parties to 465 arriages in West Cork, pril 1957 - March 1961.

PART 11 - SOCIOLOGICAL ASPECTS OF THE SURVEY AREA

Personal, Family and Household Data

In the social survey in the West Cork area interviews among householders yielded a total of 178 completed questionnaires. The numbers of respondents from the separate samples were: 99 of the 100 farmers, 39 of the 50 smallholders and 40 of the 50 householders living in towns. With regard to questions on household and family circumstances, the contents of replies submitted by farmers are here presented in detail **while** those of smallholders and towndwellers are treated in more summarised form.

Farming Group

(i) Age: It is estimated that the average age of farmers throughout the country is 55 years. ' Of the 99 farmers interviewed in thi3 study 45 were over this age and 21 of these were more than 65 years old (Table H i) . Of the latter age group there were only 7 farmers who had a

TABLE 30.1: Sample of farmers - classified according to age groups and marital status.

Age Group	Married	Widowed	Single	Total
Under 25	-	-	3	3
25 - 34	-	-	3	3
35-44	11	-	5	16
45-54	20	-	**12**	32
55-64	20	1	3	24
65 and over	16	4	1	21
,	67	5	27	99

son in his late twenties or early thirties working on the farm and in a position to inherit it. The other 14 farmers in this age group had

* ' **Report** of the Interdepartmental Committee on the Problems of Sn^ll Western Farmers. Government Stationery Office, Dublin 1962.

remained in possesssion of their holdings to an advanced age under the following circumstances:-

1 was unmarried

4 were married but without children

4 farmers had sons who left the farm in preference for other occupations. Although in each case one son kept in closer touch with the home than *hj&* brothers it was not possible to know whether he had any intention of eventually settling there* The four farms in question were all leas than 20 acres.

4 farmers had no son in their families and here the likelihood was that the inheriting daughter would marry into another farm and both holdings would be amalgamated.

1 farmer had a son on the farm who was still under 21 years.

Thus two-thirds of the elderly farmers had no incentive to relinquish their title because their successors were unknown to them or their faros were too small for any of the family to consider it worthwhile to stay at home.

(ii) Matrimonial Status: Late age at marriage and failure to marry, especially in rural areas, are widely accepted characteristics of our population.

According to Tabic Xll 27 percent of the farmers in the sample were single. These included the 6 who were under 35 years. Almost half (12 out of 27) of those single were in the 45-54 a«e group while the average age of all singT.e farmers was 42 years. Some unmarried farmers were the only members of large families to remain in the family home, the others having emigrated to Britain or America or settled in this country outside of their native district. In the majority of cases, however, another brother or sister also lived with the unmarried occupier, but from these homes too, other family members had, migrated. The average number of persons per single farmer household was 1.8. A large proportion of their brothers and sisters who moved from the area married after leaving. when single and married farmers were compared on the basis of acreage (adjusted)^ ' farmed, the former group had on average

Adjusted acreage consists of acreage of crops and pasture farmed, together with the pasture equivalent of rough grazing*

the smaller farms, the respective sizes being 29 and 44 acres.

(ill) Age at Marriage; With regard to the married farmers (and the widowed) in the sample it was not possible to establish the age at marriage of every husband or widower as some informants were inclined to be hesitant in answering questions designed to obtain information of this kind. Tor the 63 of the 72 married men who specified their ages at marriage the average was 35 years. This age was the same as the average age at marriage of 465 grooms whose marriages were registered in the Survey area between April 1957 and March 1961. It must be remembered, of course, that these latter official records included non-farmers.

(iv) Children: In the farming group there was an average of 2*8 children per married householder (including the widowed). Regarding the education received by these children,about 75 percent of those who had finished school received primary education only. The other 25 percent inoluded children who received post-primary education to some extent, but answers indicated that there were many who failed to complete the post-primary educational course which they had undertaken. This was especially true of children who entered secondary schools. Approximately two-fifths of the children who had finished their schooling (primary or post-primary) were still attached to their homes. The remaining three-fifths had left home to settle elsewhere in this country or to emigrate abroad.

(T) Household Composition: In 11 farmhouses one or both of the house-holder's parents were alive, and in 25 homes the farmer had one or more relatives living with him. The proportion (60 percent) of single farmers having parents or relatives in their households was more than twice that of the married farmers who lived with parents or relatives.

The distribution of farmers' households according to the number of persons, residing therein is shown in Table nil, Column 2. The proportion (ʳ6 percent) of households having only one, two or three occupants was rarkedly high.

TABLE 1111; Distribution of households according to sample category and - persons per household.

Persons per Household	Farmers' Households	Smallholders' Households	Town dwellers Households	Total
1	10	6	1	17
2	25	10	6	41
3	21	3	7	31
4	13	5	12	30
5	11	6	5	22
6	7	3	5	15
7	6	3	2	11
8	3	2	1	6
9	3	1	-	4
10	-	-	-	-
11	-	-	1	1
Total	99	39	40	178
Average number of persons per household.	3»6	3«8	4-25	

(vi) Inheritance; The main object of questions on inheritance was to get some idea of the pattern of farm ownership transfer and to relate these to the marital status of farmers. Similar to queries concerning age at marriage, enquiries on aspects of inheritance and the registration of holdings met with some non-response - 13 percent of those interviewed giving no information.

The replies from 86 respondents indicating their ages on achieving full control of their farms and their marital status at the time of the Survey are presented in Table XIV.

TABLE XIV; Age at acquisition of title, and marital status at time of Survey.

Age at Acquisition	Number	Married	Single
Before 30 years	23	13	10
30-34	23	21	2
35-39	14	12	2
40-44	6	3	3
Over 45	6	4	2
Registered Owners	72	53	19
No Information	13	-	-
Not Registered	14	6	8
Total	**99**	**59**	**27**

Thus of the 72 farmers who were registered owners and of the 14 not so registered, the numbers married in each group were 53 and 6 respectively. The Table indicates that 46 farmers had acquired control of their holdings before 35 years of age. This proportion would appear to be higher than is usually considered. Twenty-six became owners after the age of 35* With regard to the percentage married, there was no difference between those who became registered owners before,and after 35 years. (73 and 74 percent, respectively).

The number of unregistered holdings in the Survey was high. In some instances a will was made by the previous owner but the present occupier failed to pursue its provisions.

(vii) Family Farm Income: In respect of 94 of the farmers in the present-study details of family farm income (1) over a twelve month period were obtained from the farm management investigation undertaken in connection with the Resource Survey. Thus, it has been possible to

* ' Family farm income includes value of farm produce consumed in the home.

correlate the incomes from 94 farms with the farmer's age, marital status and the number of persons in his household (Table XV).

Farmers grouped by income and classified by age, marital status and number. of persons, per household.

	Income Group (£)						Total
	up to 200	200-399	400-599	600-799	800-999	1000	
UK							
Up to 3k years	1	4	1				6
35-44	2	6	5	1	2		16
45-54	7	11	7	3	2	1	31
55-64	5	9	4	2	2		22
Over 65	9	4	2	1	1	2	19
Total	24	34	1?	7	7	3	94
Marital Status							
Married	10	22	16	6	6	3	63
Widowed	3	1			1		5
Single	11	tf	3	1			26
Total	24	34	19	7	7	3	94
Persons per Household							
1 or 2	17	10	1	2	2		32
3 or 4	5	13	7	4	1	2	32
5 or 6	2	7	5	-	3	1	18
Orer 7		4	6	1	1		12
Total	24	34	19	7	7	3	94

There was no very definite relationship between age of the farmer and the size of his farm income; generally all age groups shared in the distribution of low and high returns. When farm incomes were related to marital **status,**

22 of the 26 single farmers, were grouped in the income bracket of less than £400 (Table XV). Approximately half of the married farmers were on either side of this income level.

Table XV **shows** a dose relationship between the number of persons per farm household and the amount of farm earnings. Although 68 percent of the homes had less than 5 persons the proportion of farmers in each household size group who earned more than £400 increased with the larger households. Thus, family farm incomes over this figure were earned by:-

5 of 32 households (16 percent) with' 1 or 2 persons each
14 " 32 " (44 ") " 3 or 4 "
9 " 1 8 " (5 0 ") " 5 or 6 "
8 n 12 • (67 n) " over 7 " "

Smallholders

No smallholder interviewed derived his livelihood solely from his holding. The informants in this sample category represented a wide range of occupations, some of the professions, and a few retired persons, both native and foreign-born. The sample included farm and other labourers, creamery employees, tradesmen and shopkeepers. There were 9 non-contacts;* 4 of these had gone to England, 4 others were not available for interview and 1 was recently deceased. Two others supplied information which was incomplete. The 39 remaining respondents are classified by age and marital status in Table XVI.

TABLE XVI; Sample of smallholders classified by age and marital status.

Age Group	Married	Widowed	Single	Total
35-44	6			1 7
45-54	10	2	2	14
55-64	2	1	4	7
65 •	6	2	3	11
	24	5	10	39

The age distribution and marital status of smallholders bore a close resemblance to that of the 'fanning group. About a quarter of the infomcnts v"*e

single, and for those who were married (including the widowed) the average number of children was 2.5. Household size was also similar to that of farmers - 50 percent of the homes had less than 4 persons. The average number of occupants per household was 3*8 as compared with 3.6 in the farming group. (Table 1111 Cols, (ii) and (iii)).

Town Dwellers

The sample of town dwellers also revealed a diversity of occupations. Therewere 14 shopkeepers and small traders included. The replies of 40 respondents to questions on age and marital status are set out in Table XVll.

TABLE XVll: Sample of town dwellers classified by age and marital status

Age Group	Married	Widowed	Jingle	Total
25-34	3			3
35-44	4			4
45-54	10	2	1	13
55-64	7	4	- 1	1
65 +	6	2	1	9
Total	30	8	2	40

In regard to the information supplied on marriage and household structure the town dwellers differed from smallholders and farmers. Pour aspects were especially noteworthy:

(a) A better marriage pattern existed among the town residents. Although towns in general have been shown to reflect an improvement in the proportions who marry, none of the West Cork towns could be said to be detached from a rural sphere of influence.

(b) The average number of children per married householder (including widowed) at 3*3 was higher than the average for either of the bther two groups.

(c) A greater proportion (approximately 68 percent) of those children who had left school had education beyond primary level.

(d) The average number of persons per household - 4.2 - was also greater. (Table Xlll Col.iv).

Town residents, however, were similar to farmers and smallholders in their age distribution.

Discussion

The questionnaire returns on the age and marital status of the respondents reflect the low marriage rates and the late age at which marriages take place in the Survey area (Table H and Fig. 5). Both these features are also prevalent in the national population; low marriage rates have;, in fact, existed for over a century. The average annual number of marriages per 1,000 of population during *1861+* to 1870 was 5.1 and this rate has changed little since, being 5.5 in 1960.

In the Survey area, a combination of demographic, social, economic and psychological factors may be adduced to explain the marriage structure. While it is difficult to assign degrees of relative importance to each contributing factor one significant demographic aspect of the area must be noted, viz. the deficit of single women of marriageable age. This situation has evidently deteriorated between 1936 and 1951, the last year for which relevant statistics are available. Despite the increase in the total sex ratio (females per 1,000 males) from 892 to 907 in the 15 year period the proportion of single women to single men in the 15-44 age group declined from 673 : 1,000 to 628 : 1,000. In 1951 there were by contrast 1,004 females per 1,000 males among those over 65 years.

The imbalance in the vital links of the sex structure is further illustrated in Figure 6 which indicates the changed ratic between single males and single females within selected age groups over a fifteen year period. Two single age groups, 0 - 1 4 years and 15 - 24 years are shown as they were constituted at the 1936 Census. In order to trace the change in the structure of both these groups each is shown with its proportion single according to the Census of 1951* In this way comparisons are made between two groups of persons in each of the age groups 0-14 and 15-24 in 1936 and the formation of corresponding groups fifteen years later. While this illustration is based on the unlikely assumption that deaths and immigration

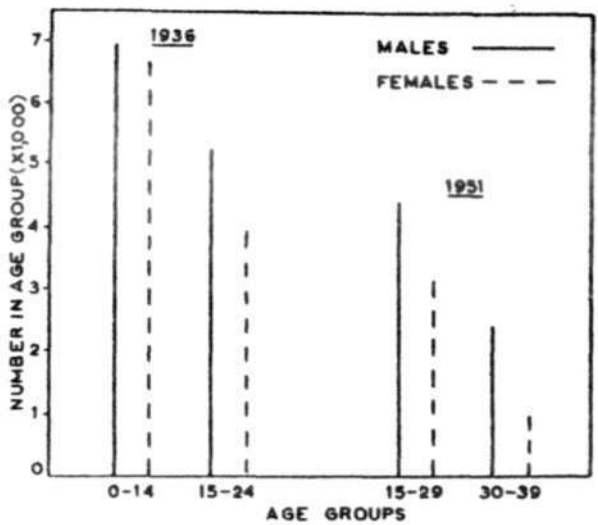


Fig. 6 - Single males and females in selected age groups in Survey area, 1936 and 1951. (N.B. Single females per 1,000 single moles were as follows, (1936), O-14 years 965; 15-24 years 768; (1951), 15-29 years 714; 30-39 years 490)

to the area have had a totally regative effect on the numbers in the groups after a period of tin.e, it still presents a reasonable picture of the weakening of the sex structure in the younger adult age groups.

In 1951 there was a noticeable disproportion in "the ratio of single men to single women. In the age group 30-39 a good part of the disparity would have been accounted for by the numbers of women in this group who were married to husbands in higher age brackets. It is felt that the main explanation of the disproportion, however, is that the migration of females from the area is relatively greater than that of males and this in turn is contended to be a strong influence among the feotors contributing to the poor marriage rates. In 1951* there were in the Survey area 2,300 more single men than single women between the ages of 15 and 39. Por the same year, both total males and total females (i.e. including those married) in the 15-29 age group were compared with their respective numbers fifteen years previously. Males had declined by 33 percent and females by *44* percent in number.

In rural areas, such as that covered by the Survey employment opportunities for women are few. Girls are easily attracted to the bett»r job prospects in the towns here or overseas. Employment opportunities for men are not" much better, and male migration is also a feature of those areas but more men stay on, whether working on a farm or in other rural occupations. This is true even where a low farm income or the inadequate remuneration of alternative rural employment militates against their chances of setting up a home with a reasonable degree of comfort at a normal marrying age. But marriage considerations, as well as the scarcily of female employment, tend to influence the decision of rural women to leave, and female migration is thus aggravated by lessening suitable marriage prospects for those women who might otherwise be in a position to stay at home.

The greater mobility of people in recent times has helped to influence their ideas on the standards of living they consider to be desirable, and where urban influences filter into low income rural areas discrepancies arise between what people would like to have and *rhat is available. The comparative ease with which females can migrate from the Survey area makes them reluctant to accept conditions at home where these compare unfavourably with what they regard as attainable elsewhere.

It can be said that few of the holdings under 15 acres in West Cork are at present worked on a sufficiently intensive scale to ensure an adequate income. The earnings of their owners fall short of providing incomes high enough to guarantee the expected material standards. Another consideration in the matter of living conditions is that farm dwelling-houses and their immediate localities are often wanting in the amenities and services which can alleviate much of the labour in the farm home.

In 1951 about one-third of the farmers in this country were over 65 years. It is widely believed that the late age at which sons acquire

(1) Commission on Emigration and other Population Problems 1946-1954, Dublin Stationery Office, 1955.

(2) Estimated by Central Statistics Office to be 38-40 years. (ibid 85, Footnote 2)

contr'l of their fathers* farms is a major contributing factor to the **low** marriage rate. For the Survey area the study findings support this Tiew only in part. As pointed out in connection with Table XIL1 a number of different circumstances left the majority of older farmers with little option but to retain possession of their holdings. Furthermore a relatively high number of farmers secured ownership of their lands before reaching 35 years (Table XIV). Of the 72 registered owners, 19 were single and these included the 6 under 35 years - the average age of marriage in the area. Six of the 14 farmers not registered as owners were married. It was also noted in the completed questionnaires that 18 informants were given their farms under a marriage agreement, tfiich would suggest that the intention to marry prompted the transfer of the holding. While these results weaken the arguments that failure to acquire ownership of holdings is a main determinant of the marriage pattern among farmers • sons, the sample is not of sufficient size on which to base general conclusions. Further studies on an enlarged scale are needed into the question of marriage patterns and inheritance.

Part of the explanation for the exceptionally high inheritance rate among farmers in the Survey under 35 years of age is the fact that practically in all cases the inheriting son was the second, third.or only son. The eldest son had gone away and by the time another son had reached his thirties younger family members were provided for, and the father was nearing the age of retirement. Evidence of this pattern was borne out in replies to enquiries on inheritance in general in the Survey area; these showed that there was no established practice whereby the eldest son always became heir to the holding.

It has also been held, that apart from considerations of ownership transfer, the presence of elderly persons or other dependant relatives in the house has a retarding influence on the possible marriage of an inheriting son. While it is understandable that girls will hesitate to marry into households under circumstances which they believe might give rise to domestic tensions this factor is so inextricably fused with others that it is difficult to gauge its singular significance. Evidence from those interviewed was inconclusive on this point. A number of unmarried informants spoke of having to "look after the old people". On the other

hand there were instances of where the marriage of a son took place while one or both parents were alive*

The consequences of the country's low marriage rate are stated in the Report of the Commission far Bnigration and other Population Problems. ' An important conclusion by the Commission was that the low rate for so long a period has produced effects that are in their turn further causes of keeping the rate at an unsatisfactory level. It has contributed to discontent, unsettlement and emigration, and, where the proportion of unmarried people is high, there is a risk that the community's sense of responsibility will be insufficiently developed. Furthermore, the consideration of economic circumstances as obstacles to marriage for so many years has created an attitude of undue caution among young people and this view may cause the postponment of marriage on the grounds of age alone, even if other circumstances are favourable.

Low marriage rates, being significant characteristics of the. Survey population would undoubtedly have consequences for the Survey area 'similar to those enumerated for the whole country. Other attendant features of the poor marriage pattern were noted in the course of the study. In some districts primary school enrolments were decreasing steadily due to the decline in the number of families.

The houses of bachelors were for the most part badly in need of repair yet there was little intention of making any improvements. Table XV showed the majority of single farmers to be in the lower income groups. From observations made in the area numerous instances were recorded of unmarried men letting their land, usually after the death of the parents, and migrating to other employment.

MIGRATION

Migration is a term which includes emigration, immigration and internal migration. Although large numbers of people were leaving Ireland before the I8if0's emigration was not such a predominant demographic feature of the country mrtil after the 1845-47 Famine; since then it has been largely the cause of the continuous and exceptional fall in population. Immigration has

Commission on Bnigration and Other Problems 1948-1954
Dublin,Stationery Office, 1955.

not been considerable whereas internal migration has to some extent changed the relative distribution and composition of urban and rural populations*

Volume of Emigration: When referring to the Survey area, the tent emigration is used to mean movement of people out of West Cork but not necessarily abroad. Figures representing the population decline for the area must not be taken as showing the numbers of people emigrating from there* Movements of population take place in all directions and there is simultaneously emigration and immigration* Difficulties of maintaining continuous and accurate records of the movements of people made it impossible to evaluate separately the opposite streams of migration* Figures of gross emigration (i.e. the total number of persons who leave the area to take up residence outside it) are therefore not available*

In the absence of emigration or immigration the population of an area normally increases by its natural increase, i.e the number of births less the number of deaths. An estimate cf an area's net emigration may be calculated for any intercensal period by determining its natural increase (or decrease) and combining the resultant figure with the rise or fall in its population. This is uniertaken for the Survey area in Tables XVIll and XIX. A ten year period was chosen, i.e. the two five-year intercensal periods 1951 and 1956 and 1956 to 1961.

There are some points to be borne in mind in assessing the figures in Table XVIll. Births and deaths are recorded for official purposes in the Registration (i.e. Dispensary) Districts where the events occur. Local Registrars in the Survey area have commented on the increasing tendency in recent years for births to take place in hospital. It was pointed out, too, that in the case of illness people submitted more readily to hospital care$_0$ The composition of many households would rule out the necessary attention being given to the sick or the aged. In the Survey area hospital facilities are available in Bantry, Skibbereen, Dunmanway, Castletownbere and Schull and it is in the Dispensary Districts corresponding to those towns that the majority of births and deaths were registered during 1951-61. It follows therefore that, for the individual Dispensary Districts, the births recorded cannot be taken as showing the true number of births occurring to mothers living within these Districts. Similarly, deaths registered in a

TABLE XV111: Registration of Births and Deaths in Survey Area, 1951 to 1961.

Dispensary Districts	1951 - 56		1956 - 61'	
	Births	Deaths	Births	Deaths
Castletown	418	260	291	223
KilCatherine	70	113	103	79
Bantry	540	313	227*	253
(Durrus and				
(Kilcrohane	25	69	21	78
Glengariff	25	68	59	61
Kealkill	44	61	26	50
Goleen	29	91	22	91
Schull	187	231	107	227
Drimoleague	133	180	96	154
Skibbereen	599	464	531	454
Tullagh	60	127	67	112
Union Hall	161	185	137	178
Ballineen	75	141	34	127
Coolmountain	72	146	17	135
Dunmanway	375	223	218	239
	2,813	2,672	1,863	2,461
Natural increase or decrease	+141		-598	

These figures cover the period April 1, 1951 - March 31, 1956
These figures cover the period April 1, 1956 - March 31, 1961
Maternity facilities not available in Bantry Hospital 1958 - 1961
Source: Registers of Births and Deaths.

Dispensary District may differ numerically from the actual number of its residents who have died. The total registrations for the Survey area, however, are submitted as an acceptable basis on which to estimate its natural increase or decrease. Births and deaths affecting the Survey population also take place in hospitals outside the area, especially in Cork city, but it is felt that their numbers would normally have little net effect on West Cork's natural increase (or decrese) as births outside the area would be largely offset by deaths.

In Table XIX the estimates of increase or decrease are combined with the area's decline in population to give the estimated net emigration.

TABLE HI: Estimated net emigration *from* Survey area, 1951-1961

Period	Decrease in Population	Natural increase or decrease	Net Emigration
1951 - 1956	2975	+141	3116
1956 - 1961	2837	-598	2239
1951 - 1961	5812	-457	5355

Population 1951 = 44,257

Source: Census Reports and Registers of Births and Deaths

This shows that there was a net emigration of 5,355 persons from the Survey area between 1951 and 1961. But births registered in Bantry Dispensary District in the latter half of this period were exceptionally low in number (Table XVlll) with the result that there was a heavy natural decrease shown for the Survey area (Table XIX). In consequence the figure of net emigration as calculated (in this case it is the decrease in population less the natural decrease) is a somewhat deflated one. It may be assumed that births occurring to mothers resident in Bantry Dispensary District showed no great change in 1956-61 as compared with the previous five years; it may also be assumed that during this period many of the births, which in normal circumstances would be registered in the Dispensary District, were recorded outside the Survey area. On this premise the Bantry Dispensary District would have between 300 and 350 more birth numbers than were actually recorded. This would leave the Survey area with a natural decrease of between 100 and 150 persons in the ten year interval 1956-61. When combined with the decrease in population (5,812 persons) this latter estimate would give an approximate net emigration of 5,700 persons.

Comparisons between the emigration rate from the Survey area and that from the whole country are given in Table XX. It will be noted that the rate of fall in the population of the Survey area between 1951 and 1961 was greater than even the higher estimate of its net emigration rate. This was because a natural decrease accounted for part of the drop in population. Although net emigration from the Survey area was not as high as the national

TAflra XX: Rates of change in population, natural increase or decrease and estimated net emigration per 1,000 of the average population in the Survey area and the Republic, 1951 to 1961.

Area	Decrease in Population	Natural Increase or Decrease	Estimated Net Emigration
West Cork	14.1	- 0.3	13.8[2]
Republic	5.1	9.2	14.3

The arithmetical average of the population in 1951 and 1961

Based on the higher estimate (5,700 persons) of net emigration

Source: Census Reports and Registers of Births and Deaths

rate, the area's rate of population decrease was almost treble that of the State. When this trend is considered with the fact that the Survey area had its highest percentage population decline (13.1 percent) for any intercensal decade since 1861 (Part 1, Population Trends) it appears that the area is failing to maintain its stock of people quite apart from the heavy losses due to emigration.

Migratory Patterns: Some general remarks may be made on migration in this country. Firstly, migration has been mainly rural and in effect it has meant emigration. In consequence, the proportion of the total population of the Twenty-Six Counties living in rural areas has fallen from 80 percent in 1851 to 59 percent in 1956. Secondly, migration has been largely to North America and Britain, and thirdly, emigrants have tended to settle in urban centres rather than in the rural parts.

To trace the migratory patterns in West Cork, each of the 178 house-holders interviewed was asked to give particulars of his brothers, sisters and children who had settled outside the Survey area either in this country or abroad. In this way it was possible to have information on two generations of migrants. Their total numbers still living at the time of the survey was 303 (152 males and 151 females). With regard to location, the sexes were equally divided: 24 males and 23 females had settled in this country, while 128 males and 128 females were living in Britain or

America. A number were also living in Australia and New Zealand but their total was negligible and they are excluded from analysis, as were also members of religious orders.

Destinations

while Britain and America have been the main foci for Irish emigrants, a marked change has occurred in the relative importance of the two countries as destinations. Until the depression years of the 1930*8, the United States absorbed the bulk of our emigration but in recent years attractive post-war employment conditions in Britain have channelled the stream of emigration into that country.

Only those findings pertaining to migrants from the Survey area who left the country are here presented in detail. Information was obtained on 256 such migrants or 6\.5 percent of the total number of persons traced. The data reveal an historical pattern similar to that of national emigration. Table XXI indicates that although the direction of emigration from the Survey area has altered for both sexes the degree of change has been much less for females. It would appear that even when few male emigrants were going to Britain there was steady female emigration to that country. Equal numbers of male and female emigrants were located in Britain but there is comparatively even distribution in the number of females going to Britain over the years.

Some inferences may be drawn from these findings. There has been a sufficiency of female employment in Britain, especially in nursing and domestic service. In addition, women are also influenced by non-economic factors in their decision to emigrate but male migration responds directly to changes in the availability of employment.

Emigration to Britain or America usually took place in one migratory move from the Survey area. Many emigrants were employed locally before leaving home but questionnaire replies showed that environment and family background prepare people at an early age for a life overseas and that such local employment is sought as a preliminary to emigration rather than as a means of providing a permanent livelihood* A small number had been employed outside the Survey area and had become detached from the parental home for

TABLE XX1: Emigrant relatives of 178 householders in the Survey area, classified according to period of their departure and location at the time of the Survey.

Period of Departure	Male		Female		Total	
	America	Britain	America	Britain	America	Britain
Pre 1929	43	1	22	11	65	12
1930-45	5	29	24	38	29	67
1946-55	3	20	4	13	7	33
195*-62	-	27	2	14	2	41
Total	51	77	52	76	103	153

some years before leaving the country. Cork city was the main intermediate destination for those who did not emigrate directly. It was also observed that some emigrants changed residence abroad, moving to America from Britain and vice versa.

It was noted that 24 of the total 178 householders interviewed were returned emigrants who had re-established themselves at home. Of these 14 were farmers, 5 were smallholders and 5 were living in towns. In the case of the farmers, 3 mentioned the American depression as a reason for coming home, 4 returned to their ageing parents, 5 bought farms and 2 gave no reason. It may be added that 50 percent of the householders had relatives in Britain or America.

Age at Migration

Females leave the Survey area in greater proportions than males (Fig.6) but the records indicated that females also differ in respect of age at the time of departure. Approximately 50 percent of the females and 25 percent of the males left home before 21 years. By the age of 25 the majority of females had gone, whereas about 40 percent of the males had still to leave. There was no conclusive evidence that of recent years emigrants were leaving at younger ages although it appeared that the intention to emigrate was prevalent shortly after school leaving age.

Migration and Marriage

In view of the poor marriage pattern in the Surrey area it was considered important to obtain information on the marriage records of the migrant relatives (brothers, sisters and children) of those householders interviewed. The results of enquiries in respect of persons settled in Britain or America are set out in Table 2X11. Of the 213 relatives recored in the Survey as having emigrated before 1956, 9 had married before migration and 152 afterwards. Thus, 25 percent of the emigrants traced abroad were still unmarried after six years in their adopted country.

Of the groups of relatives who emigrated unmarried to Britain or .America before 1946, 74 percent of the sales and 84 percent *of* the females had since married. It would therefore appear that in regard to age at marriage (as judged by the number of years in exile) the sale emigrants from the Survey area about whom information was received differed little from the male population at hone. Similarly with female emigrants, there was little evidence that marriage took place relatively early after migration. Of the 17 female relatives who were recorded as having emigrated between 1946 and 1955, there were 10 still single at the time of the Survey.

TABLE X3Q.1: Marriage records of 256 persons who emigrated to Britain or America from Survey area.

Period of Departure	Males	Married		Females	Married	
		Before Migration	After Migration		Before Migration	After Migration
Pre 1929	44	–	40	33	3	27
1929-1945	34	-	18	62	5	46
1946-1955	23	1	14	17	-	7
1956-1961	27	-	8	16	1	7
Total	128	1	80	128	9	87

On the other band it will be noted in Table 1X11 that, of the males and females traced who emigrated as single people before 1929, almost all had

married since then. It may be inferred from this latter finding that the proportion of emigrants going to Britain or America from the Survey area who ultimately marry is much greater than the corresponding proportion (about 75 percent) in the home population.

The marriage records of householders' relatives (brothers, sisters and children) living in this country outside of the Survey area were also examined. Although not classified according to the period in which they left the area the information revealed no spectacular change in marriage patterns. Their numbers (total, 24 males and 23 females) were smaller than the group already discussed. About 50 per cœrit of both sexes who left the Survey area as single persons had married since migration.

Migration and Education

Of the migrants traced who left the country about 80 percent had received no education beyond primary school level. If the relatives of town dwellers are excluded the proportion is still higher. Post-primary educational facilities are now available in Dunmanway, SkLbbereen, Bantry, Schull and Castletown and most emigrants from those towns had made use of these facilities to some extent.

Some answers showed that people in the area felt that post-primary education increased the prospects of employment in Ireland. In fact, the migration of family members to other parts of the Republic was conditioned by the achievement of a certain standard of education. Of people who moved to other parts of the country, and about whom information was obtained, 50 percent had education beyond primary level.

Reasons given for Migration

As migration was one of a number of topics of enquiry it was only possible to record the immediate responses to questions seeking reasons for migration. The answers received therefore brought forth mainly those aspects of the migration issue, which could be said to be uppermost in the informant's mind. The probe for the deeper motives and causes that may not be readily apparent but are influential in the individual decision

to migrate is a task that must await further research. Informants were asked to specify reasons for the migration of relatives, and other people from the locality. In general, replies stressed the predominance of economic factors in influencing decisions to migrate but there was also strong evidence of other motives often inseparable from the economic. Informants rarely mentioned reasons other than the scarcity of employment or the decline of a trade or industry for the migration of relatives. However, they revealed the influence of social and psychological factors in their replies underlying the migration of neighbours and in their more general comments on migration.

Lack of employment opportunities is an obvious feature of the Survey area, and on account of this factor informants could readily justify the emigration of relatives. Answers were very similar in content; people left the area to find employment and to improve their material circumstances. Very few mentioned the desire to travel or the wish to follow a particular trade or occupation although many female migrants chose a nursing career. Answers to questions about the reasons for migration did not attach much emphasis to the presence of relatives who had made good abroad. T3iat the influence of relatives was considerable, however, was shown when the reasons for the choice of destination were sought. It was quite common for the older generation of emigrants to join an uncle or aunt in Boston, New York or Chicago. Even where economic factors were mentioned as causes for migration, relatives had speeded the departure of many by securing employment for them or by paying their fares. At present, prospective migrants from the Survey area tend to join relatives and friends working in London, Manchester or Birmingham.

In giving opinions on migration from their localities respondents reiterated the lack of employment opportunities and also mentioned other factors in their answers. Comments reflected the outlook and circumstances of the different informants. Small farmers and some shopkeepers spoke of the migration of farmers sons from good holdings; larger farmers complained about the shortage of labour and thought that some people (unjustifiably) left good jobs. It would appear then that there is

limited voluntary migration from the area. Desire for higher living standards, and the apparent prosperity of relatives and friends who return frequently from English cities were cited as influences on present day migration. A few farmers maintained that this impression of prosperity aroused discontent among their sons who would inherit the family farm.

Discussion

Heavy rural migration imposes economic, social and psychological strains on those who remain. Elements of disruption appear in the economic and social structure and the community loses its cohesion. If the young and active migrate re-organising the production and social life of the community is very difficult. In its worst form rural migration, by creating apathy, discontent, frustration and a sense of crisis, sows the seeds of further migration.

Migration from the Survey area is a selective process and its consequences are expressed in the present population structure. Those who leave are young adults and hence there is a low proportion of the total (38.5 percent) in the 15 - 44 age group and heavy concentration of those over 45 years (36.5 percent) . Proportionally more women than men migrate and the sex ratio has become unbalanced. In 1951 there were 843 males per 1,000 females in the 15-44 age bracket. Female migration at its recent scale induces a low marriage rate. These factors re-inforce and sustain each other because the belief that better marriage prospects exist outside the Survey area is a contributory cause to the migration of its women.

Changes in farm structure have responded slowly to changes in the agricultural population. Farms have gradually become fewer and larger. This is seen from the decline in the number of holdings between 1 and 50 acres in the Survey area as discussed in the section on "Economic Aspects' of the Survey Area". Farm productivity however, has remained static. Observations showed that numbers of holdings were vacated, c

either: temporarily or permanently, by owners who were employed elsewhere. These holdings were rented to neighbours but many were farmed on un-productive or unsatisfactory lines.

Migration has dealt a severe blow to the commercial life of the smaller-towns. Population decline has diminished business activity, and trade earnings have decreased in proportion to rates and other overheads* These towns have become less attractive for shopping, as the motor car has made it possible to visit larger centres which offer a wider choice of goods and specialised services. In 1956 the number of shops per 1,000 people in the Survey area was 19 and the average turnover per shop was £3,800. The corresponding State figures were 13 shops per 1,000 persons with'a turnover of £7,100 on the average.

Traditional and less formal social activities are on the decline, or have disappeared. In some localities they have not been replaced and social life within these areas is at a low ebb. In general, increased mobility has made contemporary recreation forms available to most young people, and groups often travel 20 to 30 miles to dances and other social functions.

Family units break up early as youthful members leave, although home ties are normally strong enough to ensure frequent return visits. In some instances only the parents were left in the family home. Situations were also observed where the head of the household had emigrated to England, the other family members remaining behind because of housing difficulties abroad or in the hope that the father would eventually obtain employment at home. Complete households also move away but it is not possible to say whether this is a common feature of migration from the area.

DWELLING-HOUSES AND AMENITIES

The study questionnaire included queries on dwellinghouses and amenities in the area. A notable feature of the houses in the sample was their age - 55 percent were built before 1890 and many of these were over a century old. Table XX111 shows how houses were classified by their

period of construction.

TABLE XXlll: Houses in sample classified by period of construction

Period when Built	Farmhouses	Town-houses	Smallholders' Houses	Total
Pre 1890	65	17	17	99
1890-1920	16	7	15	38
1920-1940	13	9	6	28
1940-1960	5	7	1	13
Total	99	40	39	178

The majority of farm houses were two-storey slated and appeared to be solidly constructed. However, about a quarter had fallen into bad repair and looked dreary and uncomfortable. Older people predominated in these houses.. About 3& percent of farm dwellings were in a good state of repair and the remaining 37 percent were in need of some repair. In general, houses of smallholders and town dwellers were more habitable.

About 55 percent of farmhouses surveyed had been reconstructed or substantially repaired (Table XXLV). There was ample evidence that people did not apply for grants, or that they undertook building in a way that rendered them ineligible for grants.

TABLE XXIV: Repairs and reconstructions carried out.

	Farm Houses	Town-Houses	Smallholders Houses	Total
Repaired or reconstructed	54	11	10	75
(No. of grants)	(39)	(9)	(7)	(55)
No reconstruction or repairs	45	29	29	103
	99	40	39	178

Water Supplies

An estimated 16 percent of rural households in this country have piped water supplied. In the Survey area 14 percent of the sample of farmers had this amenity but only 3 percent had bathroom and toilet facilities. The domestic water supply in the three sample categories is shown in Table XXV..

TABLE XXV; Domestic water supplies

Sample Category	No. in Sample	Private Piped	Mains	Drawing water	Drawing water over 100 yards
Farmers	99	12	2	85	31
Town dwellers	40	5	33	2	-
Smallholders	39	4	12	23	14
Total	178	21	47	110	45

The main source of private piped supplies was the gravity flow, a method facilitated by the hilly nature of the area and the abundance of surface water. A high proportion of smallholders being located near the towns bed access to the mains supply. The significant finding in Table XXV is that 25 percent of those interviewed carried water for domestic purposes from sources over 100 ynrds distant, the well being the commonest source of supply.

Table XXVI indicates the extent to which piped water i3 used in the house and farmyard. Of the 87 farmers who had no piped supply in their yards, 11 had water tanks and the remainder depended on nearby wells or streams. The numerous streams and springs out on the farm were availed of for watering stock in the fields.

TABLE XXVI: Use of piped water

Sample Category	No. in Sample	House and Farmyard	House only	Bathroom and sanitary facilities
Farmers	99	12	2	3
Town dwellers	40	-	38	36
Smallholders	39	-	16	14
Total	178	12	56	53

[v] 'A dwelling is regarded as served by a piped water supply if the supply ia piped into the dwelling or yard.

Informants were asked about their intentions of improving their dwellings and their replies are classified in Table XXV11. This shows that where the installation of piped water was contemplated there was little immediate prospect of taking it past the kitchen sink in the first instance. Lack of

TABLE XXV11; Householders who intended to carry out improvements

Sample category	No. in Sample	Additional Building	Reconstruction	Piped** Water only	Piped water and sanitary facilities
Farmers	99	4	19	23	4
Town dwellers	40	1	3	1	1
Smallholders	39	1	1	1	5
Total	178	6	23	25	10

capital was cited as the chief limiting factor.

These findings on water supplies are in keeping with the results of a previous investigation^(1) covering three areas, one of which was. included in the present Survey area.

Electricity Supply

Among the 99 farmers in the Survey sample 40 had electricity; 24 of these had the scheme extended to their farm yards. The main use was for lighting although nearly every household had some small electrical appliances. Seven farm houses with electricity also used bottled gas. The number of farm houses without electricity (59) was high. In 35 of these the lines had not reached the townland and only a few were sure of its early arrival. In 24 cases the scheme had not been accepted by the householder, or in a few instances by hi3 near neighbour. The main reason given was the high basic charges. A number of farmers would avail of the scheme if given the opportunity again. Bottled gas was used by 16 of the 59 farmers without electricity.

All of the 40 town dwellers had an electricity supply. Seven of the 39 smallholders' houses were in areas which had not been reached by the scheme, and

^ O'Carroll, Barbara M.
"Some aspects of the Economic and Social Factors in the Supply of Pitied Water to Rural Areas'*
An Foras Taluntais Economic Research Series No.3,Dublin,1962

a further 8 householders did not avail of it. The remaining 24 used electricity.

Fuel Supplies

Most of the households visited used both turf and coal; 62 (including 50 farmers) cut turf. Many rented a portion of bog and hired labour for the task of cutting. Much use was also made of timber as some of the old plantations are being cut away gradually.

Communications and Transport

The roads leading to most farm dwellings were in poor condition, especially during the winter months. Only 35 of these houses were close to tar-surfaced roads; 1*2 houses were up to a mile distant, 11 more were between one and two miles and 10 were more than 2 miles distant from such roads.

Discussion

The drudgery of drawing water a considerable distance is likely to constrain the housewife to a maximum economy in its use. When piped supplies are installed consumption will tend to rise and waste disposal becomes a problem. The interdependence of water supplies, sanitary facilities and sewage disposal in contributing to domestic comfort seemed insufficiently realised. Another factor was the indifferent attitude towards investing money where the saving or economic returns were not immediately obvious. The main obstacle, however, to the more extensive use of piped water was the limited capital resources of the householder. In this respect it is interesting to note that the average farm income of 14 farmers whose dwellings had piped water was £6*71, while that of the three farmers who had piped water, bathroom and sanitary facilities averaged £1,016.

In the matter of home improvements generally householders gave the impression that apart from difficulties in structural alterations or shortage of capital, they were unfamiliar with the grants available and with the procedures necessary to derive maximum benefit from them.

EDUCATION AND READERSHIP

Besides the enquiries made into some aspects of education in the Survey area, it was decided also to find out the extent of readership and the nature of reading preferences. Although reading is very much a recreational activity it can be an important medium through which the educational and social conditions of rural communities are improved. Consequently, education and readership are dealt with together in this section of the Report,

Education

Of the 178 householders interviewed, only 24 (13 percent) had received full-time post-primary education. The position was even less satisfactory among those in the farming group as only 4 percent of the sample had received education of this nature and this figure includes the 1 percent who had been to an agricultural school.

The proportions who attended adult classes were somewhat greater but here again the record of farmers and farmers' wives was less satisfactory. Nine percent of the farmers and 11 percent of the wives reported having availed of adult classes in their locality.

Of the town-dwellers interviewed 30 percent had attended adult classes, usually in local vocational schools or in other centres conducted by the County Vocational Education Committee. The corresponding proportion of smallholders was about 15 percent.

Enquiries were made regarding the numbers taking full-time post-primary education in the Survey area. Between 1951-52 and 1961-62 total enrolments in secondary school courses increased gradually from 407 to 664, while during the same period the number of enrolments in full-time day vocational courses varied between 310 and 370, but the main trend was towards the higher figure.

Parents interviewed were asked about their plans for those of their children who were still at primary school. The majority were arccious that their children should get secondary or vocational education but the distance

from schools was frequently mentioned as being prohibitive, bus „*rriee3 in these cares were unsuitable. Where possible children seemed to avail readily of post-primary educational opportunities, some pupils cycling up to 8 miles each way daily.

Readership

For the purposes of the Survey, library membership was adopted as a convenient and sufficiently adequate measure of readership. Generally, participation in library services was reasonably high; 47 of the 178 households (26.4 percent) had one or more members in a library association. The number of households in each sample group was: farmers,12 out of 99; smallholders, 14 out of 39; and town dwellers,21 out of 40. Table XXV111 shows the distribution of library members among the three household categories and the membership expressed as a proportion of all persons in the households in each category.

TABLE XXV111: Library membership among samples of households

Household Category	Library Members	Total Persons in Households	Percentage Membership	Percentage excluding pre school ages
Farmers	14	365	4.0	4.3
Smallholders	16	149	10.8	12.0
Town dwellers	36	170	21.2	22.6
Total	*66*	684	9.6	10.7

In this country about one person in sixteen (6.1 percent) uses a public library. ' Compared with the national average the rate of library membership among smallholders and town dwellers was satisfactory while that of the fanning community was low. It may be inferred that little reading is done in farm households as a continuous supply of reading material is unlikely to come from any source other than the libraries.

Barry, Senator Anthony, "Library Achievement" An Leabharlann, Vol.17 No. 3, September 1959.

Readership in General_ in the Survey area

The organisation of library services in the Survey area is based on 5 library areas (roughly corresponding to the Sural Districts) each of which has a branch library and a number of smaller centres. In five ; years the branch libraries at Bantry, Castletown Bere, Dunmanway, Skibbereen and Schull showed between them an increase in readers of almost 50 percent, from *1,040* in 1956-'57 to 2,085 in 1961-'62. These figures do not account for the total library service in each library area but generally the membership in the library areas would show the same • trend. In 196-62 the average number of issues per reader in the branch libraries was 40. The popular classes of books were novels, biography, travel and history (especially local history).

Newspaper Readership

The extent of newspaper readership in the Survey households is set out in Table XXIX. Daily newspapers were read in the homes of one-third of the farmers, two-thirds of the smallholders and seven-eights of those

TABLE XXIX; Type of newspaper read in Survey holdings

Household Category	No. in Sample	Daily	Weekly Provincial	Sunday
Farmers	99	34	80	70
Smallholders	39	26	30	*26*
Town dwellers	40	*35*	37	*35*
Total	178	95	147	131

living in towns. The weekly provincial newspaper enjoyed most popularity, being read in 83 percent of Survey households.

Farming papers were read by 32 percent of the farmers interviewed, although only 16 percent said they read these papers regularly.

Discussion

Perhaps the most significant finding in regard to education was the low proportions of the farmers interviewed who had full-time or part-time education after primary school. While it is recognised that there must be opportunity as well as enthusiasm for part-time education the facilities provided are better than the numbers using them would suggest. An increase in participation in all forms of adult educational activity is necessary both for the introduction of better farming methods and the development of the attitudes necessary to the improvement of rural welfare generally.

The desirability of secondary and vocational education courses is widely recognised in the Survey area and enrolments at such courses have increased since 195^• However, there are many localities where children are precluded from the opportunities of post-primary schooling because of distance and lack of transport facilities.

With regard to library provision,the introduction of a County mobile library service in 1960 and its extension to the Survey area in 19&2 is altering the extent of the library areas. The growth of private transport and improved roads had already tended to extend the perimeter of those areas. Plans have been prepared to have fewer and larger library areas and to double the present mobile service in the Survey area. The expected result is to bring a full library service to the immediate localities of a great part of the population.

USE OP THE AGRICULTURAL ADVISORY SERVICE

In considering this aspect of the survey, regard must be had to a number of factors which limit the applicability of the findings. First, though five Instructors (one per 1,300 land holders with over 10 acres) served the area at the time of the survey, such intensification of the service was then of very recent origin. In fact, only one of the five was a permanent Instructor. The others were temporary officers who did not give continuous service in the area. ' Presumably because of its unfavourable location, it had not been possible to retain a complete and regular staff for the entire region. Second, the sample was small and the information in regard to the Agricultural Advisory Service was incidental to that collected in the general sociological study. Third, the geographical peculiarities of West Cork are such that the Advisory Service, in endeavouring to cater for so many units scattered over long distances, labours under the handicaps common to other rural services and it is impossible that all localities could be served equally or that each farmer could have an equal opportunity of enlisting the aid of an Instructor. Fourth, the economic circumstances of the area, and particularly of the smaller farming units, would not be conducive to stimulating the demands for advisory services. All those factors which are peculiar to this, and other Western areas, must be borne in mind in considering the findings of the survey.

In order to get an idea of the extent to which the existing agricultural advisory service was being availed of, each farmer interviewed was asked whether he knew the Agricultural Instructor for his area. Any farmer who failed to name an Instructor was considered to have little contact with the service. This proved to be a reasonable assumption as most farmers who could not name an Instructor added by way of comment that they never "asked him to call".

Those who mentioned an Instructor by name were further asked if they had sought his advice during the year immediately prior to the Survey (1961) and if so, the number of times. They were also asked if they had

* It is understood that two of the temporary posts are now being made permanent.

consulted the Instructor during 1960, although in this case the number of times was not asked. Most of those who gave a positive reply also added the number of occasions. Thus the interview findings made it possible to place informants in three categories:-

(i) Those who did not know an Agricultural Instructor;

(ii) Those who knew an Instructor but who had not consulted him for over two years.

(iii) Those who both- knew the local Instructor and had sought his advice on one or more occasions over the two year period.

Based on replies to questions on this matter, 57 of the 99 farmers interviewed would be placed in the first category above. The remaining 42 knew the Instructor but of those, 19 (or *k5* percent) liad not sought his advice. It is considered, therefore, that 76 of the farmers in the sample (approximately 77 percent) were not direct users of agricultural advice; these are here referred to as 'non-users' of the service. In comparison with this group, the remaining 23 farmers in the sample (approximately 23 percent) were regarded as 'users' of the service - they consulted their Instructor with different degrees of frequency within the two years prior to the interview. This 23 percent would represent about 1.600 farmers over the Survey area as a whole or 320 per Instructor.

Taking the two years separately, it was found that 20 farmers made contact with their Instructors during 1960, while 17 did so in 1961. Of the latter 17 the following were the number of times on which the Instructor was consulted - 6 farmers consulted once, 1 farmer consulted twice, 3 farmers constulted three times, 5 farmers consulted four or more times and 2 farmers could not specify the number of occasions with acceptable accuracy. Fourteen farmers had consulted their Instructor in both 1960 and 1961.

In this study an effort was made to examine possible relationship between respondents' use of the advisory service and such factors as age, marital status, age at succession, farm size, readership of farming papers and the installation of water supplies and electricity. No one variable could be specified as influencing farmers' attitudes towards the use of the service. The study disclosed, however, that the farmers who consulted

an advisor inside the two year period were younger people, owned bigger farms and reported having made more changes in their farming programmes. A higher proportion of these farmers also built or reconstructed farm buildings, reclaimed land, had soils tested and read farming papers. A higher proportion had electricity and piped water in their dwell ingho uses.

An analysis of personal data revealed a significantly high proportion of elderly persons among the farmers who were judged as non-users of the advisory service - 40 percent of these were over 60 years of age while 12 percent were under 40 years. The corresponding percentages for the direct users were 22 percent over 60 years and 17 percent under 40 years.

In both groups of farmers the proportion married was similar, i.e. approximately two-thirds. So few farmers had formal education subsequent to primary school that this factor was irrelevant in differentiating between the groups. Among the 23 direct users, the average size of farm was 56.6 adjusted acres^and family farm income averaged £622 in the year of the Survey. Similar data were available for 71 of the *16* farmers who were considered non-users; these showed that average area per farm was 31 »8 acres (adjusted) and average farm income was £321. In Table XXX the two groups of farmers are compared on a percentage basis in respect of a number of selected features.

TABLE XXX;: Comparison of selected characteristics of farmers in the Survey using and not using the agricultural advisory service in ^^*60* and 196*1.

Feature	Direct users percent	Non-users percent
Built or improved farm buildings	93	39
Reclaimed land	65	25
Had soils tested	93	***16***
Had major changes in farm programme	60	25
Read farming papers	74	22
Electricity in home	74	32
Piped water in home	37	8
Had succeeded to farm by age of 34	63[a]	42
Were registered owners of farm	00	64°

a = 13 percent non-response; c = 17 percent non-response;
b = 13 percent non-response;

While the 23 farmers grouped above were those who used the agricultural advisory service directly on one or more occasions inside the two-year period *1960/1961* 14 of those (or approximately 14 percent of the whole sample) had made more intensive use of the service. These latter farmers had consulted their adviser on a greater number of occasions in 1961 and also availed of Lis advice during the previous year. Their farms were comparatively large (average 63 acres adjusted) and 9 of the 14 had family farm incomes of over £700, the average for all 14 being £750.

Discussion

In regard to the farmers interviewed in this study it is apparent that the majority had little or no direct contact with the agricultural advisory service. It will be observed from the study also that a number of interdependent characteristics were associated with the use of the agricultural advisory service by farmers. Doubtless there are others, e.g. active participation in farmer organisations, the situation of the farm home, and opportunities for contacting the instructor, which could be examined. The present sample was not sufficiently large to hold some factors constant and thereby overcome the inter-relationships between so many variables. It was not possible, therefore, in this study to isolate the significant influences which motivate farmers to use the advisory services at their disposal. However, where a group of farmers are found to approach their advisory officer there is in each a reflection of the proper managerial attitude which seeks and applies the best available knowledge.

TABLE 11: Average turnover by shop type.

Shop Type	Annual Turnover per Shop (£100's)				Survey area as percentage of State Avg.
	State	Munster	Cork Co. West	Survey Area	
Grocery	46	35	23	22	48
Grocery with public house.	63	43	35	31	49
Public house	34	20	10	11	32
Tobacco, sweets and papers	25	16	12	9	36
Drapers	108	94	46	54	50
Others	142	119	114	111	78
All types	71	52	38	38	54

Source: Census of Distribution, 1956.

The position of public houses and 'all types' of shops in Munster in 1956 is further analysed in Table 111. It should be borne in mind that the figures in this Table represent totals for the areas and shop types and are not average figures.

TABLE 111: Public houses and shops (all types) in Mun3ter as percentage of the State.

Shop	Number, percent of State	Turnover, percent of State
Public House	45	26
All types	36	27

Source: Census of Distribution, 1956.

An analysis of the average turnover per shop (all types) for the various districts making up the Survey area, and also for Munster and the State is given in Table IV. The very low averages for Castletown and Schull should be noted, as also the rather high average for Dunmanway. The .figure for Bantry is approximately equal to that for Munster while that for Dunmanway is

above the Munster average.

TABLE IV: Number of shops per 1,000 people and average turnover* **per shop** (all types) in Survey area, **Munster** and the **State in 1956***

Area	Shops (per 1,000 people)	Turnover (I £100)
Skibbereen (Urban and Rural) Districts	19	34
Bantry Rural District	20	51
Dunman-ffay Rural District	16	59
Castletown Rural District	20	23
Schull Rural District	25	18
Survey Area	21	2
Cork County West	18	38
l!unster	16	52
State	13	71

Figures for turnover rounded in each **cr.se** to the nearest hundred pounds.

As regards the number of shops per 1,000 people in the various districts of the Survey area the most striking fact is the wide difference in the figures for Dunmanuay and Schull. The close correlation between the Survey area and Cork County West i3 also of interest.

Creameries

Drinagh Co-operative and the Dairy Disposal Company operate the majority of the creameries in the area. Drinagh Co-operative retails a wide range of goods at its headquarters - it could be described as **a** rural supermarket. Its branches concentrate on groceries, light hardware, seeds, fertilisers and animal feedingstuffs, as do the headquarters and branches of the Dairy Disposal Company. Both organisations have their **own** lorries **and** do the bulk of their ovm transport.

Licensed Premises

The analysis of the 195& Census of Distribution **shows** that there is a large number of public houses in the area. This is **a** feature of the South Ana

lest of the country generally but it is more marked in Munster than elsewhere as it contains nearly half the national total of public houses, but these account for only a quarter of the relevant turnover. The average turnover of a public house in the Survey area is only approximately half of the Munster average. Generally, these licensed premises are long established and it is obvious that the owners are unwilling to relinquish their licence. In many of those, stocks were small and the impression gained was that these public houses were not the sole source of income for the owners. Viewed against a background of changes in the brewing industry and in drinking habits and the declining rural population, it is difficult to see a future for many of the small public houses in the area.

Retail prospects in the Survey area

There can be little doubt that the area is overpopulated with shops but it is unlikely that major changes will take place in the short term. It may not be possible for traders who wish to sell out to dispose of their businesses for the value they put on them. Many of the small units, such as the small public houses and •variety* stores which are 'uneconomic' will continue in business because the owners have alternative sources of income and because overheads and 'wages* are very low.

The more active traders may try to provide a better service such as regular deliveries direct to farms, more attractive shops and hire-purchase facilities. Competition between shops (including the creameries) for the custom of a declining population is likely to intensify, leading to a decline of the inefficient businesses. The proposed industrial developments are not likely to have any appreciable effect on this trend. They could indeed accelerate it by bringing more business to the more efficient shops. The social implications of the decline in the number of shops in this and in other areas might well be a subject worth further study.

Wholesale prospects in the Survey area

Local wholesale firms have to meet competition from wholesalers in Cork, Dublin and Limerick and from the direct selling by some manufacturers. A. decline in the number of retail stores would mean less retail units per wholesale outlet. This does not mean that the total volume of business

would decrease. It could mean that a smaller number of more efficient wholesalers would be sufficient to serve a smaller number of retailers. Modern methods of handling goods plus larger consignments going to fewer outlets are bound to stimulate this trend. A continued drop in the population could mean a decline in business activity even if living standards were to rise and this would be reflected back to the wholesalers. RGDATA has established a wholesale depot in Cork for its members and transport developments have led to the natural growth of Cork as the principal railhead for the area.

It is possible that Bantry may hold its position or even improve it as a. wholesale centre for direct shipments through the port. Experience shows that many small ports can compete with larger ports for certain •types of traffic due to lower handling charges.

The number of wholesalers in the area is small in absolute terms and it is not suggested that any of them are going to go out of business. The developments outlined above will mean increased competition both between local wholesalers and those operating from Cork and elsewhere, lhat the results of this will be it is impossible to foretell.

Discussion

Prom the various facts and observations already outlined, two merit special mention. Thase are common to most areas in the South and West and they raise questions of national importance. The selected facts are:-

(a) there are too many small retail outlets, and

(b) the population is declining.

There is no way of estimating the ideal number of shops for any area and there can, therefore, be no measure of the extent to which the Survey area i3 over-populated with shops, particularly small shops. To find the principal cause of the problems of the retail trade in the Survey area, we must therefore look at the structure of that trade rather than at population figures. There are too many small shops doing insufficient trade to justify their existence. It is the system that is basically at fault, not the proprietora and not the population decline. A solution to the problems of those whose businesses will eventually decline and disappear must not involve an attempt to save those businesses but must aim at providing alternative employment.

SECTION D

SUMMARY AND CONCLUSIONS

SUMMARY AND CONCLUSIONS

In the previous sections the findings of the Resource Survey of West Cork have been presented and discussed under a number of headings. These reveal the situation in the area relative to the physical, economic and human resources, the problems prevailing and the possibilities for development. Some of the more salient features of the Survey findings are summarised below.

The Survey Area

The Resource Survey was confined to the area of Cork county west of a line from (Jlandore through Ballineen and almost to Macroom and comprises approximately 700 square miles. Five rural districts - Dunmanway, Skibbereen, Schull, Bantry and Castletown - are included in the Survey area. With the exception of Dunmanway, these rural districts lie in the reconstructed congested district of West Cork.

Topography and Land Forms

The physiographic features vary considerably within the area, providing rapid and significant changes in a complex landscape. The elevation varies strikingly, rising from sea level to 2,000 feet over short distances. The northern half, in particular, is very mountainous whilst the southern half is mainly steeply rolling to hilly. In the latter area the continuity of the land-form is constantly broken by patches of rock outcrops giving a very broken landscape. Along the lien and Bandon rivers, which traverse the area, sizeable tracts of low flattish relief occur.

Geology

The geological pattern of the area is very complex. Not only are the

solid formationa complicated in terms of age, mode of formation, structure and composition, but the glacial drift deposits overlying the solid formations, and forming the parent materials of most of the arable soils in the area, are of a very mixed origin and constitution.

The principal rock formations are Old Red Sandstone and Carboniferous shales and slates with some grits. The overlying drift deposits are derived mainly from the underlying solid formations and show great variation in physical constitution, and to a lesser extent in geological composition. Over much of the area, particularly at the higher elevations, drift cover is thin or non-existent leaving expansive stretches of bare rock. Alluvial materials occur along the river courses.

Climate

The Survey area has higher average annual rainfall with higher relative humidity and has milder conditions generally (with a greater number of frost-free days) than most other parts of the country. A considerable range of annual rainfall exists in the area, with a decrease in rainfall, in general, towards the coast. Thus the average annual rainfall ranges from 40 inches in the coastal areas to 110 inches in the mountain regions.

The area has an average annual temperature of 51 P, being about 2°P higher than the east coast. The coastal area is consistently higher than the rest of the area by about 1 P. The average number of days per year with a minimum air temperature of 32 P (frost days) is 25, diminishing to 10 at the coast. l*v comparison, the mid-region of Ireland, e.g. Tullamore, averages 50 frost days in the year.

The relative humidity is generally 5 to 10 percent higher than in the midland region of Ireland, and ranges from 75 to 85 percent (monthly average). The average duration of bright sunshine during Winter is about 2 hours per day, and during Summer months averages 5 to 6 hours per day. Winds are frequent, and wind velocities in general are high, Often reaching gale foroe.

Soils

Soil pattern of the area; A survey of the area has revealed that the soil pattern is a most complex one. The soil survey enabled an inventory to be made of the quality, extent and distribution of the soils occurring, the distribution being shown on soil maps.

The better soils occurring in the lowland areas belong to the Alluvial, Brown Earth and Brown Podzolic groups and mostly constitute the limited arable soils in the area. Of far, more extensive occurrence are the poorer Podzols, Cleys, Peats and Skeletal soils, found mainly in the hill and mountain regions.

The extent of the different quality soils varies considerably within different Rural Districts. Skibbereen and Dunoanway Rural Districts have a relatively high percentage of good quality soils (49 and 44 respectively) compared with the Rural Districts of Bantry, Castletown-Bearhaven and Schull (23, 12 and 22 percent respectively). By comparing Skibbereen District with Castletown-Bearhaven District the extreme in soil quality difference can be seen where the former has 49 percent of the better class soils and % percent of the poorest quality soils against 12 percent and 79 percent respectively for Castletown-Bearhaven.

The extent and relative proportion of each class of soils have been calculated. It has been shown that the better type arable soils constitute 33 percent of the entire area whilst the very poor soils mainly in the hill and mountain areas (with extensive rock outcrops - up to 75 percent of the area in extreme cases) constitute 57 percent. The remaining 10 percent of the area has a mixture of soils with impeded drainage, some degraded (podaolised) soils that have been reclaimed and some alluvial soils of mixed quality. These soils are only of poor to moderate quality.

The great variation in quality, extent and distribution of the soils in the Survey area and between different Rural Districts is reflected in the differences in relative prosperity and economic viability prevailing throughout the area. It is obvious that within the area the proportion (approximately one-third) of high or medium quality soils is very limited. These soils, devoted mainly to mixed farming practices with strong emphasis on grassland,

are not being used in most cases to full capacity. The poor soils of the hill and mountain areas, at present used for extensive grazing with limited areas being put into forestry in more recent years are now stocked at levels far short of their capacity even in their present poor state of development. Considerable improvement is possible in these hill grazings.

Soil pattern on farms: Intensive soil survey on a number of selected farms in the area revealed the wide variability in soil quality between farms. The best quality soils varied from as little as 3 percent on some farms to as high as 98 percent on others, whilst the poorest soils varied from 0.1 to 83 percent of total farm acreage. In general the best quality soils occupied a higher proportion of the farms in the smaller size categories, and the poorer soils were relatively more extensive on the larger farms but wide variations in soil quality existed between farms within all size categories. This variability in soil quality at the farm level is very significant in terms of farm output and economic returns and stresses the importance of considering soil quality as well as farm size in making economic assessments of farming enterprises. It is apparent that even the best quality soils are not producing to their full capacity.

Soil Fertility

Low fertility status: A fundamental problem underlying the entire crop enterprise in West Cork is the limited extent of good quality soils, but of equal significance is the low supply of calcium (lime) and nutrients in the majority of soils in the area. Phosphorus deficiency, with at least 90 percent of the soils in the "extremely deficient" and "deficient" categories is most serious but potassium and nitrogen are also very lifting. Only 16 percent of the soils in the sample area are in the "moderately satisfactory to satisfactory" category for potassium. Approximately 50 percent of the soils -are in the "moderately satisfactory to satisfactory" category for lime. The general nutrient status of the tillage soils sampled in the area was slightly better than that indicated above but that of grassland soils was considerably poorer.

Taking into account soil type it can reasonably be concluded that the majority of soils in the Survey area should show a significant output response to adequate dressings of the appropriate fertilisers. Liming is also required for best results on the deficient soils. Pasture land (by far the biggest category) has the greatest lime and fertiliser need and in this regard the nitrogen supplying power of pasture clovers merits attention. A survey of clover nodule bacteria (responsible for nitrogen fixation) in a number of pastures revealed that the majority of strains were ineffective in this respect. Lime and fertiliser use on tillage soils needs attention also, though to a somewhat lesser extent.

Liming materials: An examination of the various coastal sand materials used for liming in the area revealed that the majority are of low total neutralising value (as low as 7 percent, the average being about 35 percent) and are uneconomic sources of lime. Wider use of ground limestone (which averages over 90 percent total neutralising value) should serve the needs of the area better. Subsidies at a local and state level help to maintain the seasand scheme.

Crop productivity: In the last decade the acreage under wheat has declined rapidly in the area but the average yield (22 cwt/acre) is comparable with the national average. The oats yield (20 cwt/acre) in the sane period has averaged slightly better than the national average but there has been no gradual increase in yield over these years. Barley yields at 27 cwts per acre are almost 4 cwts per acre higher than the national figure and barley growing has been expanding. Potato yields show no apparent increase in recent years. Yields of swedes about equal the national average but mangel yields in the area are somewhat better.

Crop Husbandry

Due to the limited area of arable soils suitable for general croT>T>inv» *crA* because of'steep slones ani exposure hazard the cropping potential (apart from grass) in the Survey area is limited. However, there is scope

for general improvement in this field by way of better standards of crop husbandry and the Introduction of new crops and new and Improved varieties of existing crops.

Farm Crops; Because of the small acreage devoted to crops on each farm and the small and irregular size of fields and nature of the terrain (rock outcrops etc) mechanisation is difficult. Weed and disease control measures are not sufficiently practiced, and lime and fertiliser use is inadequate to provide for higher returns from most crops. Barley production could be increased to advantage to supplement the livestock food supply. Better grain drying and storage facilities are needed. The present acreage of potatoes is about adequate to provide the needs of human consumption in the area. Any expansion in this line with a view to marketing ware potatoes outside the area is unattractive because of high transport costs. However, neither seed nor early potato enterprises are common in the area and these should prove lucrative.

There is scope for the expansion oi' fodder crops (especially kale) to supplement the inadequate winter feed supply for dairy cows, and to enable the general cow-carrying capacity of the smaller farms to be raised.

Industrial Crops; Due to the limited scope for cultivated crops the possibilities for a nuuber of industrial cror>s have been invesci~atod. Some skill in handling fibre crops survives from the days v/hen good quality flax was grown in the area and this is a distinct advantage, the flax industry declined for a number of reasons, impart from the withdrawal of price support, a numbe r of factors including poor varieties, poor seed, low fertiliser use, lack of proper weed control measures and inferior retting aethods leading to poor yields of low quality fibre rendered the enterprise an uneconomic proposition. From experiments conducted and fron experience in other countries, it has been shown that by improved husbandry methods including better varieties and by better retting facilities high yields of good quality fibre can be obtained. Besides the fibre, the flax crop can provide valuable by-products, one of which, the seed, can be used for oil and linseed cake.

Hemp as a possibility for the area is also considered. This crop is widely grown in countries where small farms and hand labour predominate and gives high returns per acre. The crop is well adapted to this country although native to a warmer climate than ours. Experiments have shown that yields of 15 cwt or more of good quality fibre can be obtained in Ireland. Monetary returns per acre should be reasonable and a potential market exists for the fibre. The West Cork area has two advantages for this crop, the climate is mild and some skill in handling fibre crops survives there.

Possibilities for growing oil crops for pharmaceutical purposes in the area have been considered also.

Horticulture

Suitability of area; The potential in relation to expansion of horticultural enterprises in the Survey area has been considered against prevailing climatic, topographic (shelter etc.) and soil conditions.

The climate of the area is compared with areas in south-east England (Devon, Cornwall, Scilly Islands and Channel Islands) where highly specialised horticulture is an important enterprise. Although West Cork compares favourably in sunshine and winter temperatures with most of Ireland, when compared with conditions under which Cornish horticulture has developed the area is less favoured as regards sunshine, summer termperatures and rainfall.

Strong winds are a feature of the area, and wind-borne salt may pose problems in growing certain crops in coastal areas. The topography is such that there is little general shelter from the prevailing strong south-west winds. However, sheltered locations are provided by the winding indented coastline and these could be further protected by well planned shelter-belts. Fragmentation of production however increases problems of transport.

Although good arable soils are limited, by proper selection a sufficient extent of soils suitable for most horticultural crops can be found for a sizeable horticultural enterprise. The most interesting soils both for the production of specialised crops and for the cultivation of main crops for such purposes as factory processing, are indicated. In many localities therefore, it should be possible to find a combination of mild maritime climate, relative

shelter and suitable soils for specialised horticultural production. Further in'and selected areas offer scope for maincrop production. In all cases the need for adequate liming and manuring is emphasised considering the low soil fertility levels prevailing.

Horticultural Crops; The special advantages of the district, at least relative to other parts of Ireland, is its earliness, For vegetable production for the fresh vegetable trade this i3 a decided advantage. The mild winter climate would also allow overwintering of autumn-sown crops such as Savoy cabbage, broccoli and Brussels sprouts for supplying the processing plant in winter and spring. The selection of varieties resistant to "ringspot disease" would need special attention. Other vegetable crops to avail of the mild winter conditions would include leeks, spinach, autumn-sown broad beans, asparagus kale and other kales.

There is distinct scope for the expansion of early potato production. Any intensification in this sphere would require special attention to such factors as varieties, earliest planting dates, best cultural techniques and method and time of planting, A supply of the most suitable varieties, a central sprouting station and grading, transport and marketing facilities would be required for a worthwhile industry in this field.

For tomato growing the district has a slight advantage over some other districts in Ireland in having better summer sunshine and some saving on heating costs.

The possibilities for commercial flower growing,(anemones, violets, daffodils, tulips, irises, polyanthus, stocks, anthirrhinums and chrysanthemums[N] have been examined, and the area has certain climatic advantages in this regard although the high and frequent rainfall may be del3terious to flower quality. Ornamentals such as Pittosporurc aaaallia and acacia and the expansion of bulb growing are other possibilities. For the production of glasshouse flowers the area has little if any advantage.

Soft fruits such as blackcurrants, strawberries and blueberries have also been considered and would appear to offer some promise. The selection of suitable species of trees and shrubs for shelter and the future possibilities of beekeeping have been discussed,

The development of a horticultural enterprise would require an adequate level of technical guidance and demonstration to compensate fop the relative lack of horticultural skills and traditions in the area. The necessary supply of materials, of harvesting, grading, transport and marketing facilities, so vital in this business, would also be required.

Grassland

Importance of grassland: Grassland is most significant in West Cork because about 85 percent of the land is devoted to grass and this provides for about 80 percent of the food requirements of the cattle and sheep in the area. Grassland can make a valuable contribution to total farm production. In planning development of the area, therefore, grassland should receive foremost attention*

Output; The production capacity of a number of pastures was measured in terms of utilised starch equivalent and the figures per acre showed marked variation between different areas,but in general, yields were considerably below the national average, which in turn is low by European standards. In one sample of farms studied the starch equivalent per acre of total grassland (including hill and bog grazings) averaged 8,8 cwt, and for arable grassland 12.6 cwt. Sixty-eight percent of the farms had outputs between 6 and 16 cwt. starch equivalent per acre and 52 percent had an output under 14 cwts per acre, which is the national average. Likewise for farms in other samples studied the results were slightly better or poorer than those above. In the first sample above the average output of butterfat per acre of total farm was 27 lb. and of the farm area under pasture and hay was *k-5* lb. These outputs are low by comparison with easily attained levels of production, taking the soils into account.

Quality of award: A pasture survey conducted on selected farms revealed that the majority of pastures consisted of fourth-quality swards containing a predominance of the poorer "type grass species. Many of these pastures had been sown down with good species but these did not survive due to poor

management and lack of fertiliser. In most instances the swards concerned were capable with propermanagementof carrying first class pastures,

Fertiliser use: Fertiliser practice on pastures has also been studied. Some average figures for grassland manuring in West Cork in 1960 and comparative figures for manurial practice elsewhere highlight the poor position prevailing. Levels of fertilisers applied in the Survey area in lb, per acre of nitrogen, phosphorus and potassium respectively averaged 5.6, 7.1 and 13,8 These levels may be compared with 25.2, 12.7 and 23.0 lb, respectively for United Kingdom and 83.2, 19.4 and 48,1 lb. respectively for the Netherlands.

It is very obvious that the rates of fertiliser application in the West Cork area are but a fraction of the desirable levels. This is a reflection of the national pattern which shows Ireland amongst the lowest users of fertilisers in Europe.

Grassland experiments conducted in the area on selected representative soils, to measure the impact of improved fertiliser use and management on output, substantiate the degree of response possible at the prevailing low levels of fertility. Increases of up to 500 percent dry matter output were attained under experimental conditions. The use of moderate amounts of N.P.K. fertilisers coupled with proper management œ.n immediately increase yields of grass by at least 50 percent with relatively little difficulty. Apart from the beneficial cumulative effect on the soil, the food produced is of much higher quality.

The increase in quality and quantity of herbage would allow f?.rrj3rs to carry larger numbers of grazing animals at a higher level of nutrition. The need to increase the stock numbers to utilise the increased production is strongly emphasised and in this regard attention must be paid to improving winter feed supply and husbandry practices generally.

Rough grazing lands: Hill and mountain grazings in the Survey area (even though the soils are poor) are far below potential in stock-carrying capacity at about 17 acres per cow unit. The grazing tracts are devoted mostly to summer grazings for cattle. The great scarcity of sheep in the hills is

remarkable as similar hill grazings carry large sheep numbers in other parts of the country. Host of the mountain land could at a conservative estimate be improved five-fold in carrying-capacity using techniques recently developed.

A partial explanation for the low number of sheep on the hill grazings may be the prevalence of cobalt deficiency in the soils. A very high proportion of soil samples taken from hill pastures had values for total cobalt below the deficiency level. This problem is easily overcome by providing cobalt.

Clover contribution to pastures: A survey of clover nodule bacteria was carried out in the Survey area in light of the fact that Irish pastures have to depend largely for their nitrogen supply on clovers which can fix atmospheric nitrogen through nodule bacteria. Bacterial strains were tested for nitrogen fixing capacity on red and white clover and revealed that 63 percent of the strains were ineffective; 20 percent partially effective and only 17 percent effective in the case of red clover. In the case of white clover 56 percent were ineffective; 22 percent partially effective and 22 percent effective. This study clearly indicates that the clover strains in the area at present management and nanurial levels cannot be depended on to supply the full nitrogen need3 of grass/clover pastures.

Butterfat output: A survey of butterfat output per cow showed that general output levels are more favourable than the output per acre levels. In a group of farms surveyed butterfat yields between 115 and 185 Ib« P«r cow were given by 72.5 percent of the herds. Butterfat per acre averaged 27 lb. for total farm area, and 45 lb. for the farm area under pasture and hay. These figures may be compared with butterfat yields per cow of 250 lb. and butterfat yields per acre of 192 lb. obtained with relative ease on soils of moderate quality in a creamery district outside the Survey area, where improved management and fertiliser use practices were being tested.

Winter feed position: The position with regard to Winter feed supply was investigated. The preponderence of poor quality old pasture swards, the

low levels of fertilxser use, the poor quality clovers and the negligible use of nitrogenous fertilisers for early Spring grazing, means a shorter grazing season than is warranted by the relative mildness of climate. This results in a longer than necessary Winter feeding period. The quantity and quality of conserved surplus Summer grass, available for Winter and early Spring feeding, is of great importance in this area where milk production is the key enterprise. A survey of a number of farm records indicated that 88 percent of the cows in the area calved in the period Eabruary to May. This means that conserved grass (mainly hay) forms the main feed for the in-calf cows and emphasises the importance of the quantity and quality available.

Approximately O.36 acres of hay per cow equivalent is allowed and hay yields from new meadows average about 30 cwt. per acre. Less than 5 percent of the farmers in the survey made silage. Hay samples analysed showed very low levels of phosphorus and crude protein. A phosphorus content of over 0.3 percent in pasture dry matter is considered optimum for dairy cows. The analyses of hay samples from the Survey area showed that only 19 percent of all samples had more than 0.3 percent phosphorus. In general, crude protein was low. Sixty-seven percent of all hay samples had a content of less than 10 percent.

Analyses for potassium showed that 55 percent of all hay samples had a potassium level less than 1.5 percent. As an indication of the nutritional level of the sward, this shows an unsatisfactory position since potassium is a key element for clover growth..

The results presented show that hay, which constitutes the main part of the Winter feed is sub-standard in terms of its nutritive value. This is a reflection of the low fertility status of the soils and, to a lesser extent, the cutting of hay at a late stage of maturity.

Pasture Management: A study of grassland management in the area revealed that general practices were not conductive to the establishment and maintenance of high producing, high quality pastures.

Livestock Production

The main livestock enterprises in the area are dairying and pig production. An investigation of the dairy herds and husbandry practices was carried out on a number of farms, and a similar study on pigs was conducted.

Dairy Cows: The predominant breed of dairy cow is the Shorthorn, comprising 81 peroent of the cow population on the farms surveyed, whilst 15 percent is made up of Shorthorn x Friesian. The average herd sice is 10.5, with a range from *k.* to 23» Calving dates are very similar to the pattern for the whole southern region with about 90 percent of calvings occurring in the February-May period. Eighty-five percent of cows in the herds examined were between 3 and 9 years old. The pattern of winter feeding of cows was broadly similar on all farms, the basic foods consisting of hay and roots with a home-mixed concentrate before and after calving.

Milk Quality: With the desirability of aiming for greater diversification of high quality milk products it is all-important that a high standard of milk quality be attained. A survey conducted in the West Cork area, as a follow-up to the general resource survey, revealed that milk of high quality in terms of low bacterial and foreign body infestation, was being produced. However the proportion of this quality was far too limited. Care must be exercised that the general milk supply in the area be brought to a higher quality level.

Milking practices: On the farms surveyed 78 percent of the farmers still milk by hand and 22 percent by machine. A notable feature was that 75 percent of the machines used in herds of 8-14 cows were idle for long periods (1^24 weeks) in the year.

Pig husbandry: Although pig production is an enterprise for which acreage of land xs not a limiting factor and consequently is particularly suitable to small holdings, it was found that the greater proportion of pigs

produced in the area come from the Skibbereen and Dunmanway Districts, and not from the Western districts and smaller farms. Pig numbers are on the increase in the former areas but are static or declining in the latter.

Of the farms surveyed 90 percent kept pigs, and of these about 70 percent kept sows and reared bonhams, the remainder buying in bonhams at 12-14 weeks old for fattening. Litter sise was comparable with or better than other areas of the country. On farms where sows were kept 53 percent practised creep feeding of bonhams but not generally at a sufficiently early stage. Practices of feeding the in-pig sow, the suckling sow and fattening pigs were variable. Proprietary meals were purchased for mixing in various degrees with home-grown foods by the majority of farmers.

A major problem in relation to pig husbandry was the poor quality of the housing. While anaemia attributable to iron deficiency may be one of the reasons for scours, so prevalent in young littors in the area, the possibility of bacterial causes, due to unsatisfactory hygiene as a results of poor housing, cannot be ruled out.

Economics of pig production; An economic appraisal of pig keeping in West Cork indicated that the majority of farmers keeping pigs were engaged in fattening less than 10 purchased weaners or breeding from 3 sows or less. Nevertheless these herds were so numerous that the intensity of pig production in the area was high by comparison with the national average. While one third of the farms earned margins in excess of £30 per £100 gross output, 10 percent of them showed losses. Although deaths in bonhams tended to be above average, usually 9 or more were weaned per litter.

Fattening, although more popular, was considerably less attractive financially as a system, when compared with other regions studied. This was due to the higher cost of weaners and feeding stuffs and the somewhat lower returns from bacon pigs. Seventy-eight percent of food stuffs was purchased and fed at a cost of 12.3d. per lb. liveweight gain. Purchased feeding stuffs constituted over 86 percent of all expenses. However, there are good opportunities fcr developing pig production, j>articularly in the

breeding and self-contained herds, and the returns from fattening could be improved by greater economies in food procurement and utilisation.

Sheep: The relative scarcity of sheep in the Survey area is a notable feature considering the extensive areas of non-arable land that could be devoted to such an enterprise. Fencing, however, is a problem on many of the hill areas.

Animal health and mortality: An examination of animal health and mortality revealed that losses by fatal accident and disease were normal by comparison with those for the country. In cattle, conditions such as milk fever and acetonaemia were frequently encountered and liver fluke as a clinical condition is well recognised. Mortality in young calves is low. In pigs, scouring and oedema-like conditions are common. Cobalt deficiency was identified as a limiting factor in sheep production.

Farm Buildings: A study made to assess the present standard and adequacy of farm buildings in the area would indicate that standards prevailing are in many cases below desirable levels. The greatest need on many farmsteads is for new buildings despite the number erected in recent years. Many of the existing buildings in their construction and lay-out are not conducive to labour saving and most efficient use, and many present difficulties in regard to attaining ideal hygiene, ventilation and warmth conditions. The lack of skilled builders in the area is also a problem.

Forestry Resources: At the request of the Working Party, the Forestry Division of the Department of Lands reported on the forestry situation in lest Cork, There has been considerable expansion of State forestry in recent years and the area of productive land held there has increased from 2,300 acres in 1951 to 14,000 acres in 1960-61 when the area planted was 10,063 acres. All plantations are less than 30 years old. Sitka spruce and Pinus contorta constitute 75 percent of all species planted, with a further 10 percent under Norway spruce.

Fishery Resources; At the request of the Working Party the Fisheries Division of the Department of Lands submitted a report on the fisheries situation in West Cork, which covered sea fisheries, inland fisheries and sea angling. The report reveals the *vevy* great potential for development of sea fisheries in particular; a potential at present virtually untapped.

Economic Background Of The Area

Farm holdings; The total number of holdings in West Cork has declined by 15 percent since 1901. The position regarding size of holding is not as acute as elsewhere in the West. Castletown is the only rural district in which holdings of under *JO* acres form over 50 percent of the total.

Cropping pattern; The cropping pattern of West Cork deviates from the county trend in a number of ways. Change is slower in West Cork in the case of corn orops but the decline in root and green crops has been at a far greater rate than in Cork as whole. Acreage under hay in County Cork has risen substantially in the past sixty years but in West Cork the change has been a marginal decline in acreage. The decline in pasture acreage in West Cork has been steeper than in the county as a whole. The area of •other land* is substantial - over 50 percent of the total area of West Cork is so classified.

Livestock pattern; Trends in livestock numbers in West Cork follow different patterns from the county in its entirety. The number of young cattle and milch cows has declined,contrary to the position in Cork as a whole,and there has been a rise in the number of older cattle. Sheep numbers have been rising gradually in recent years and are now above the 1901 level whilst numbers in County Cork, although rising in recent years,also are still below the 1901 level. Most of the sheep in West Cork come from the Bantry and Castletown districts.

The trend in pig numbers is more akin to the county trend than is evident for other livestock figures, although Dunmanway and Skibbereen are the only districts to return higher pig numbers in i960 than in 1901.

Poultry numbers have declined in both County Cork and West Cork. In Schull, Skibbereen and Castletown the 1960 total was below that of 1901.

Economic variation: On balance, the position of West Cork is very similar to other parts of the Congested Districts. It is not a homogeneous area - and neither are they - and may be divided into two quite clearly defined regions, the one comprising Bantry, Castletown and Schull, the other Dunmanway and Skibbereen. In the latter districts population decline has been less severe and agricultural output is higher. Dunmanway and Skibbereen Districts, despite their smaller total area, have a greater acreage of corn and root and green crops,and almost all the wheat, barley and sugar beet produced in West Cork come from these districts. They have far more pigs and poultry and are more important as dairying areas than the other rural districts.

Economic Structure of Farming in the Area

Agricultural output; The agricultural output of West Cork in 1960 amounted to £4.5 million or just over 2.5 percent of the total national agricultural output. The area represents roughly 2.6 percent of the total national area. Nearly two-thirds of this output came from the dairying and cattle enterprises and a further 20 percent from pigs. The output per acre of the total area of land was £9.8, but varied from £14.2 in Skibbereen Rural District to £5.7 in Castletown Rural District.

Cost structure of faras: The outstanding features of a detailed faro management survey undertaken on 98 farms were the low outputs and low family farm incomes on farms of less than 30 adjusted acres, and the lower farm incomes in all size categories in the western part of the region. The low output was primarily due to the combination of the relatively low numbers of livestock carried per farm and the low value of output per unit of livestock. As the cropping of the farais was almost entirely concerned with the provision of feeding stuffs for the livestock enterprises or food for the farm household,

cash-cropping was of very little significance. The economic consequences of these factors were that only 14 out of the 43 farms of under 30 adjusted acres in the survey had a total farm output of over £400. The levels of productivity per adjusted acre, (£27.7 in Skibbereen/tounmanway and £19.0 in Castletown/Bantry/Schull) were totally inadequate, given the aoreage of land available per farm, to produce a viable income.

In the SkLbbereen/bunmanway area, farm expenses were £11-£13 per acre. Of this, purchased feed represented over half (particularly on the smaller farms) and fertilisers generally cost less than £1 per adjusted acre. In the more westerly rural districts, average costs per adjusted acre varied around £7. Of this, feeding stuffs were by far the largest single item, and fertilisers cost 10/- to 12/- per adjusted acre.

The results on the under 30 acre farms are of particular significance as over 4,000 out of the total of 8,480 holdings in West Cork in i960 were in this category.

Farm incomes; As in all farm surveys a considerable degree of variation existed in the results for farm income even within individual, farm size-groups. The average incomes in the farms in the top third were generally three times that of farms in the lowest third within any one size group. The actual farm income ranged from £125 per annum to over £1,700 for farms of over 100 adjusted acres, and from £25 to £480 per annum on farms of under 30 adjusted acres.

Demographic Aspects

Population trends; Population statistics since 1861 show that there has been a continuous decline in the number of inhabitants in the Survey area over the past hundred years and that the percentage decline in 1951-61 (13.1 percent) was the highest of any intercensal decade in the century. Three other aspects in the depopulation of the area are noteworthy.

(i) Between 1926 and 196*1 proportionate population decrease has been substantially greater than in the rest of Cork County (not including Cork Ci1y), the decline in the former being 35 percent

as compared with 6.3 percent in the latter.

(ii) When population statistics were expressed in rates computed as annual average numbers per 1,000 of the population it was revealed that the rate of decline in the Survey area had increased in each intercensal period since 1901 with the exception of the years 1936-46 when a slight decrease in the rate was recorded. In the last intercensal period the rates of population decline in the Survey area and in the rest of the County (excluding the City) were 14.2 and 1.5 respectively.

(iii) Changes have taken place in the relative importance of the factors contributing to depopulation. In 1901-11 population decline reached an annual rate of 8.3 persons per 1,000 of the total number of inhabitants, the rate of 17.5 ia the net emigration of this period being somewhat offset by a rate of 9.2 in the natural increase (excess of births over deaths). Between 1951 and 1961 population declined at a rate of 14.1 per 1,000. It was considered that this fall was due to the combined effects of net emigration at a rate of 13»8 and a small rate of natural decrease (excess of deaths over births), calculated as 0.3.

Population structure: According to the Census of 1951 (the latest available source of detailed demographic information at the time of the Survey) the population of the Survey area had, in comparison with selected areas, high proportions in the age groups over 45 years, a low sex ratio in the 15-44 age group, and high proportions single in the age group 25-34 years. It was estimated that, of the number of persons living in the area who had passed the normal marriage age, 28 percent of the males and 21 percent of the females remained unmarried.

General considerations; The general demographic picture is one where depopulation has attained considerable momentum with consequent deterioration

in population structure. In most districts the older age groups are over-represented and some further decline may be expected as the ageing process will tend to aggravate the rates of natural decrease. On the other hand the proportions of persons in the younger active age group (15-44 years) are similar to those of the aggregate rural areas of the Republic. The present population is still numerically and structurally adequate to develop the physical resource potentialities of the area.

Sociological Aspects

Inheritance; A pilot social survey indicated that 21 percent of farmers were over 65 year3 of age but of this proportion only one-third had a son working on the farm and in a position to inherit it. The majority of elderly farmers maintained possession of their holdings, because there was no son to become heir, or where there had been sons these had left the farms for other occupations.

Information obtained on farm ownership transfer and its relation to the marital status of farmers' sons did not fully support the view, that the age of succession to farms is a main determinant of the marriage pattern among the farming community,, The group of farmers who become registered owners of their holdings before 35 years of age, and the group acquiring ownership after that age had similar proportions married.

Sixteen percent of farmers surveyed were not registered owners of their holdings. The majority of those registered had obtained title before 35 years of age, and were mainly the second, third or only son in their families. There was no established practice whereby the eldest son invariably succeeded his father on the farm.

Marriage patterns: Poor marriage patterns are one of the main socially undesirable features of the Survey area, and a significant factor is the deficit of females of marriageable age. In 1951 the ratio of single females to single males was 628 : 1,000. Employment opportunities for females are few and they are easily attracted to the better job prospects elsewhere in this country or overseas. Furthermore, they are reluctant to accept living conditions at home where these compare unfavourably with what they

regard as attainable elsewhere. Current economic circumstances on many of the smaller farms especially cannot give sufficient income to provide expected material standards.

Migration; It was estimated that in the decade 195[1]-1961- net migration from the area (net outward movement of people, not necessarily abroad) was approximately 5,700 persons. Females migrated in greater proportions than males and also at earlier ages. Migrant relatives of those house-holders interviewed in the social survey totalled 303, 84.5 percent of whom had left the country. Of the latter group about 20 percent had received education beyond primary level. While migrants who went aDroad did not seem to marry any earlier than the home population greater proportions of the former ultimately married.

Economic factors were predominant influences in migration but there was ample evidence that people left the area for various non-economic reasons, and 'voluntary' migration was prevalent. It was possible to examine the migration problem only in its general character and there is need for more intensive research bearing on the social and psychological motives which are influential in individual decisions to migrate.

Dwellinghouses and amenities: Dwellinghouses were old, somewhat over half of those in the total sample studied being over 70 years old. About one-quarter of farm houses (occupied mainly by older people) had fallen into bad repair. Houses of smallholders and town-dwellers were generally more habitable.

The position in regard to the installation of piped water and sanitary facilities was very unsatisfactory. Sixty-two percent of householders drew water for domestic purposes, M percent of these from sources over 10o yards distant. Fourteen percent of farmers had piped water but only 3 percent had sanitary facilities added.

The contribution which piped water, sanitary facilities and sewage disposal can nake towards greater domestic comfort seemed insufficiently realised. In general, householders gave the impression that apart from difficulties in structural alterations or shortage of capital they were unfamiliar with the home improvement grants available.

1,'duco.tion; Despite transport and distance difficulties enrolments in full-tine post primary education courses have increased within the last decade. However, the position is far from satisfactory. Of the householders interviewed only 13 percent had received full-tine post-primary education. Within the farming group the position was even more unsatisfactory, with only 4 percent having received post-primary education. The general level of education in agriculture is too low and participation by adults in educational activities is not sufficiently extensive for the acquisition of new knowledge, skills and attitudes basic to any development programme in the area.

Only 9 percent of the farmers interviewed, and 11 percent of their wives had availed of adult classes conducted in the area. Voluntary organisations and local bodies have an important role to perform in creating an awareness of the need for education to increase the receptive capacity of the community for new ideas.

Use of the Agricultural Advisory Service

The Agricultural Advisory Service in the area labours under a number of handicaps. Farms are small and scattered, and in some cases isolated, the number of holdings per advisor is large, and the maintenance of permanent staff in the area is difficult. It would appear that the majority of farmers in the area are not fully aware of the value of the service. A survey of a sample of farmers revealed that over 75 percent of these were not direct users of agricultural advice. Of the 23 percent using the service only slightly more than half used it with any degree of frequency. The survey also showed that a higher proportion of farmers availing of the Agricultural Advisory Service were more progressive than those not availing of the service.

Some Aspects of Trade in the Area

The survey ha3 shown that there are too many small shops with insufficient trade. V.*ith 19 shops per 1,0C0 people as against 13 .cr 1,0C0 for the State, sales per person are very low and average profit per shop is only half the average for the State.

POSSIBILITIES FOR AGRICULTURAL DEVELOPMENT

As revealed by the findings Vest Cork can be classified as a low income area for the major portion of the farm families and for a considerable portion of the non-farm families. The position can be described as one where serious weakness in agricultural organisations; in the general farming programme; in the development of physical resources; in education for farming; in use of advisory services; in farm housing and buildings, and in certain aspects of the social pattern have led to serious problems in the rural community.

However the survey findings show that there are factors, which from the physical, economic, social and demographic resource aspects, offer considerable possibilities, on which a programme of agricultural development for the area might proceed and for which the appropriate techniques and approach must be developed and applied. Some of the more promising possibilities in this respect are briefly outlined.

grassland

Grassland improvement constitutes one of the most valuable and promising possibilities. Present levels of production are so low, relative to potential norms in this field, that a significant increase in grassland output can be achieved in a short time through standard techniques of manuring and management presently at such low levels* This increase, provided stock numbers are adequately enlarged to utilise fully the increased output, will be clearly reflected in total farm output and in the economic structure of farming in the area.

Arable pasture: On the better arable soils (which constitute about 33 percent of the area) intensive pasture production, providing for a long grazing season with Summer surplus herbage preserved as hay and silage for Winter keep, can be achieved through increased use of lime and fertilisers, better pasture management (including more attention to clovers). Soil fertility studies, pasture surveys and experiments in the

area have shown that output increases in the region of 50 to 100 percent are possible with relatively little effort. Taking the size of farms into account the approach must be along the lines of intensifying grassland production to the limit of the capacity of the soil and environmental conditions involved. Better quality grass, hay and silage ensuring an improved level of nutrition for dairy cows and other livestock will result..

Difficult soils: On the more difficult low-land soils (covering about 10 percent of the area) great improvement in grassland output is also possible. Whereas artificial drainage is desirable for best results on some of these soils, nevertheless, they are capable of very rewarding increases in output by proper use of fertilisers and by improved management practices. Drainage, where necessary, must be approached in a systematic fashion on the basis of the soil type or types involved. On such pasture areas, however, grazing management is necessary to avoid damage through poaching by livestock in wetter periods.

Hill-land grazings: On the poorer soils of the extensive hill and mountain areas, and on the peats and the rocky land, the potential for increased productivity is also great. Present output from these areas is very low. With relatively simple techniques, including overseeding, manuring and fencing, the use of these grazings could be greatly intensified for sheep farming or general livestock maintenance, especially in a balanced farming programme integrating these areas with those in the lowlands suitable for intensive grassland production. Increasing the stock-carrying capacity to five times the present rate would present no real difficulty on many of these hill and mountain grazings. Much were difficult situations e.g. Glenamoy, Co. Mayo, can be made to support three sheep per acre with proper management and fertiliser use. The problem of deficiency of cobalt, so vital in sheep production, must be remedied but this is a simple matter nowadays.

Livestock Production

By improving the present extremely low levels of soil fertility and by increasing pasture output in the area, the stock carrying capacity could be greatly increased, adding considerably to total farm product.

Cattle: Increased stock carrying capacity could provide for expansion in the cattle population in the area. Greater milk yields should result from improved feeding standards based principally on increased output of better quality pasture.

Sheep; Although sheep numbers are gradually increasing in recent yeaia, one of the most striking features of West Cork farming is the still relatively low number of sheep raised, notwithstanding the extensive area of non-arable hill and mountain gratings. It has been shown that considerable improvement in stock carrying capacity is possible on these grazing areas with relatively simple techniques.

Fencing may be a problem where commonage rights prevail, but the potential increased output from these areas should outweigh any problems involved in their improvement for sheep grazing. Besides, intensification of present use would not conflict to any great extent with livestock enterprises such as dairying, which are confined mostly to the better lowland soils. In as far as possible, however, hill sheep grazing should be associated with lowland farming enterprises to provide some keep for hill stock during hardship periods. With the climatic conditions prevailing in West Cork hardship periods would be rare, except at the higher mountain elevations.

Pigs: The density of the pig population in the area is high by general standards of the country but there is still ample scope for enlarging this enterprise. The integration of more pigs into the dairy farming system would add to the economy of the dual enterprise and would be of particular benefit on the smaller farms where land is a limiting factor.

Pig housing would need to be greatly improved for best results. Further attention might also be given to the feeding of pigs, especially sows and young pigs, during Winter, and to the prevention of anaemia and scouring in litters.

Horticulture

Although good arable soils are limited in the West Cork area, by proper selection on the basis of the soil survey, a sufficient area of soils suitable for most horticultural enterprises can be found. The climate has advantages for the production of horticultural crops.

Two possible lines for development of horticulture are highlighted in the Survey Report. One is the specialist production of early flowers, early potatoes and early fruit or bulbs. Early production would be favoured by the mild climate, given shelter in this windswept district by careful selection of site, augmented by planting suitable trees and shrubs. Many of the most suitable soils for horticulture are found in maritime districts. Efficient and speedy transport would be of vital importance to such enterprises, since the difference of one day may cause a sharp fall in the market price of early produce. Though the climate is mild compared with most of Ireland the area is one hundred miles further north than the nearest competing district overseas (Cornwall), and is less favoured as regards rainfall, summer temperatures, sunshine and distance from most markets. These disadvantages would be intensified in comparison with such other areas of horticultural industry as the Channel Islands and Brittany.

The other line of horticultural production, vegetables and fruit for processing, would benefit also from the mild climate (especially for overwintering vegetables), while not being so closely dependent on earliness nor at such a disadvantage owing to distance from markets. Contract growing would help eliminate the element of competition with overseas producers. Larger areas of suitable soil would be available as there is less need to emphasise the earliness of littoral districts whilst transport to the factory would also be more economical as it would

not be necessary to confine produce to relatively small scattered areas along the coast. It must be stressed that any projected horticultural development must be organised to ensure maximum efficiency in production, harvesting, grading, transport and marketing. It would also be necessary to ensure the adequate flow of technical guidance and demonstration needed to compensate for the relative lack of horticultural skills and traditions in the area.

Other farm crops

Although the area devoted to tillage crops in the region is limited it is possible to intensify production by better manurial and management practices. The growing of kale and root crops in greater abundance would supplement the vital winter feed supply and would enable the cow-carrying capacity of some of the smaller farms to be increased. The acreage of barley could be expanded to advantage and provide a cheap home-produced source of energy for pig production. The growing of potatoes for seed export is also a worthwhile consideration.

Industrial crops

The adoption of modern methods for the production of flax would result in yields two to three times those formerly obtained in West Cork. This, combined with techniques for using the by-products should make the crop an economic possibility.

Hemp for fibre has given very promising results in recent trials. If suitable retting and handling facilities could be provided West Cork would seem to be an appropriate place to introduce this crop on a commercial scale.

Forestry

There is considerable scope for expansion of forestry in West Cork. Such expansion might be considered as an alternative to enlarging the livestock enterprise with particular reference to sheep, on the extensive

non-arable soils in the area, but the more ideal approach would be to integrate the two enterprises to best advantage. Such integration should be based on systematic planning taking into account prevailing soil and climatic conditions, besides the human and economic considerations involved.

In as far as possible those Mil areas with access to lowland farming could be devoted to sheep, provided soil and other conditions were suitable. The middle elevations in so far as soil and environmental conditions are amenable could be devoted to extensive blocks of forestry. The higher elewations less suitable for forestry or Winter grazing could be used for Summer grazing for sheep, thus conserving the lower foot-hills for late Autumn to Spring grazing or for supplementary Summer grazing for cattle whilst some of the lowland pastures are being conserved for winter fodder. The extension of forestry into these hill areas would help alleviate the shelter problem and add considerably to the value of the adjoining grazing grounds. Besides, an active forestry programme can boost considerably the economic and social viability of the community in general and must be given due consideration in any programme for agricultural development of the area.

Economic Possibilities for Farms in the Area

Prom a purely economic point of view the farm3 in West Cork can be divided into (a) those below the level of economic viability, (b) the economically marginal farms generally with current farm incomes of between £300 and £lf00 per annum, and (c) the relatively more prosperous units with incomes sufficiently large to enable them to overcome the economic hazards in farming.

A large number of the farms in group (a) appear likely to lose their separate identity as business units with the death or retirement of their present occupiers. It seems most unlikely that any scheme of development would turn many of these sub-viable holdings into strong economic units able to maintain their economic viability in the coming years. These farms represent a very important social problem and may require assistance

on this score. As independent farm businesses these holdings would be unable to maintain farm families in the degree of economic security regarded a.3 necessary in a modern society.

The more prosperous units in group (c) tend to be the better run faras of at least 30 adjusted acres. Family farm incomes on these range from £400 to over £1,000 per annum and the farmers would appear to have the necessary resources to undertake the expansion of their farm businesses.

There remains then the third group of farms which are on the margin of economic viability. The incomes on these holdings are predominantly between £300 and £400 per annum and at this level it is diffictilt for the farmers concerned to finance the extra investment required to raise their level of farm income. These are the farms on whi a concentration of economic assistance would seem to give the most worthwhile opportunities for improvement. On some of these the immediate social problems of elderly farmers or bachelors tends to inhibit the incentive to improvement. Others, however, could become viable econonic and social units if the opportunities they offer for improvement were exploited through a policy designed particularly to raise the level of output, both per acre and per man.

ACHIEVEMENT OF POTENTIAL IN THB SURVEY AREA

Two outstanding features relative to the potential of th* Vfest Cork area energe from the survey f indings:

(a) improvement possibilities are there;

(b) despite emigration, the population is still adequate to develop the possibilities.

To achieve the necessary improvement in production and in the economic viability of the area, through a suitable action programme aimed at rural renewal and development, a number of basic factors must receive attention. These summary remarks do not include any considerations regarding industrial development in the area, which might also of course, receive due attention in a balanced programme of development.

1. Education, vital to the acceptance of new and improved techniques, must reach a far higher standard and be extended to reach a greater number of the community. The level of training and skill required in present day agriculture is certainly no less than, that required in industry, and here only the trained and skillful are in demand. Farn training and education has never reached a satisfactory level in Irish agriculture generally. Competitor countries for the world's agricultural markets have been placing more and more emphasis on agricultural training at all levels, particularly in the post-war period. In Britain great strides have also been taken to ^expand and boost the standard of farm training and education. From a pre-1939 situation vrfiere most people involved in the farm business had no formal training they are now approaching the level where 50 percent are trained and well qualified for the work they undertake. The agricultural industry of to-day demands a very high standard of technical capability but even more so the agriculture of to-morrow.

   In this respect adult education, advisory and training work are all-important as a basis for making a suitable action programme

effective. The farming and rural community must clearly understand the requirements basic to improvement and be conditioned to absorb and apply the instruction given. The level of instruction has to be of the highest possible order backed by the necessary factual information. Taking the present situation as shown by the survey into account, it is apparent that new techniques to achieve the desired level of advancement must be introduced and applied as soon as possible.

The necessary changes in farming structure to meet the needs of a more viable and economically remunerative farming system must be made, and weaknesses in the present structure must be eliminated, A systematic approach to the small farm problem will require an immediate study of the implications of greater integration *of* activity among the farmers concerned in comparison to increasing farm sire as such, a process which is already under way. It is necessary in this respect to examine the implications of the greater integration of farm effort at the local level through such techniques as improved co-operation for bulk buying; the sharing of expensive machinery and equipment,and in the marketing of farm products.

There is some lack of factual information on various factors of production, especially in terms of the immediate need for intensive grassland management and the growing of cash crops, as bases for achieving greater economic viability through increased farm output. A suitable programme of scientific experimentation and investigation to establish optimum fertiliser applications and management practises for the improved output of grass and other crops is required. It would also be necessary to investigate suitable cash and industrial crops that could be introduced, and to establish their manurial and management requirements. The proper integration of the results of these investigations into the general farming programme of the area must also be considered. A continuing research

programme would be needed to cater for future adjustments in the agriculture of the area.

Increased productivity from the land in terms of fodder crops and grass must be accompanied by more intensive stocking to utilise fully the extra production. In this regard also improved livestock husbandry practices will need to be introduced to obtain more efficient conversion of fodder to saleable animal products.

If the necessary progress is to be made the maximum co-operation of the entire community must be obtained through a suitable programme of community development. In any programme it is essential that the maximum involvement of the local people must be achieved. It is of fundamental importance that local initiative should be encouraged through appropriate organisation to receive the services and aids (state and otherwise) available. Consequently,, the activities of the various local statutory and voluntary rural organisations concerned must be utilised fully, and properly integrated so as to provide the basis for a suitable action programme.

Because of the continuing need for factual information on the various stages in the implementation of such a programme of development, based on a specific fact-finding survey such as that carried out, and in view of the need for the development of suitable techniques for the improvement of other areas in the country, it is considered that the West Cork area should continue to be treated as a study area. Such continued study can be a highly important and essential feature in a sound rural area development programme.