The upper and middle Eden Valley

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ABSTRACT

THE UPPER AND MIDDLE EDEN VALLEY

Dissertation presented for the Degree of M.A.
by J. Howe

The upper and middle Eden valley is an example of a region in which agriculture is the major economic activity. Although sparsely populated, regions such as this are of fundamental importance in the economy of the country as a whole.

This study was undertaken in order to assess the importance of geographical factors in the evolution and present characteristics of the economy and pattern of settlement.

In Part I an examination is made of the relief and drainage, climate and soils. The region is a distinctive physical region, having clearly defined upland areas as its boundaries. Following the discussion of the relief and drainage in the region as a whole, a more detailed study is made of the four physical regions.

Because the region is a lowland flanked by uplands, there are differences in climatic conditions. Temperatures are most extreme in the lowlands. The incidence and duration of rainfall and snowfall increase rapidly with altitude. In addition, the higher areas suffer from exposure to the wind and lack of sunshine.

Although a comprehensive survey of soils, based on a study of soil profiles, has not been carried out in the area, information is available on soil texture and this is discussed in Chapter 3.

In Part II an assessment is made of the influence of these physical factors on the economy and pattern of settlement.

The natural resources of the region are limited and farming has always been the major activity. In accordance with the contrasts in the physical environment, farming varies considerably within the region. After discussing the general characteristics of farming, the region is divided into three agricultural regions and to illustrate these, eight specimen farms are analysed in detail.

Mining and quarrying are of some importance in the region and the economy is further diversified by the processing of the raw materials.

The pattern of settlement has evolved to serve the needs of this predominantly agricultural area. Detailed fieldwork was carried out in order to assess the functions of the elements in the modern pattern.

Because so much of the area is above 750 feet and because the region is bounded by uplands, communications within, and into other regions, are limited. At the present time road transport plays a much more significant role in the economy than railways. The planned extension to the M6 passes through

the western part of the area.

In Chapter 8 the population trends since 1851 are first discussed. The most significant point to emerge is that there has been an overall decline in population of 20%. Following the analysis of the distribution of population, is a study of population structure. This latter study reveals that most of the people leaving the area are in the vital age groups of 15 - 39.

The greatest problem in the upper and middle Eden valley is depopulation. In order to alleviate this, the area's first need is more processing industries. One asset the area possesses is that the cost of building land is lower than in many areas of the country. Secondly, the planned extension to the M6 will give the region more efficient links with the rest of the country. The Motorway could help the upper and middle Eden valley to achieve a more balanced economy and thus, a more stable population.

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- by -

J. Howe

July, 1965.

C O N T E N T S

FIGURES

TABLES IN TEXT

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INTRODUCTION

The upper and middle Eden valley is that distinctive tongue of lowland situated between the North Pennine Plateau, uplifted for the last time during the Tertiary earth movements, and the Lake District mountains.

This region is an important part of Northern England if only because it is 400 square miles in area. More significantly, it is a distinctive geographical region. Its boundaries are bold upland areas. As defined here the region is the Eden Basin from the source in the south to the Armathwaite gorge in the north. In the upper valley, the western limit of the Eden Basin is clearly defined by the upland of Wild Boar Fell. North of this region, in the middle part of the basin, the western boundary is an escarpment, made of Carboniferous limestone in the south and west and Permian sandstone north of the Eamont. The Pennine watershed forms the eastern boundary throughout the region.

Structurally the area is divisible into two regions, the uplifted block of the Pennine Plateau with a bold western escarpment, and west of the scarp, the faulted syncline along which the Eden now flows. Whilst the former region is one of Carboniferous sandstones, limestones and shales, the latter is

an area of both Carboniferous limestone and newer Permo-Triassic sandstones. Relief varies in accordance with these differences in structure and rock type; east of the bold Pennine scarp is an extensive plateau sloping gently eastwards from 2000 feet. West of the scarp the land is generally below 600 feet. From this lowland the land rises gently to the western scarps, which rarely exceed 1200 feet.

Because the region comprises a lowland flanked by upland country there are very significant climatic contrasts within the area. These variations in relief and climate are particularly significant influences because agriculture is the dominant activity. Although lead was mined during the 18th and 19th centuries and since then barytes, gypsum and anhydrite have been worked, none of these resources has ever formed the basis of an extensive industrial development.

In agriculture there are very real differences within the region, because of the variations in altitude. Within a distance of six miles there are large hill farms of over 1000 acres and in contrast lowland farms of 200 acres.

The pattern of settlement and communications evolved to serve the needs of an agricultural area. The predominantly agricultural economy is also reflected in the low density of population, which in the region as a whole, averages only 41

per square mile. Opportunities for non-agricultural work are very limited and the decrease in population since 1851 reflects the narrow resource base.

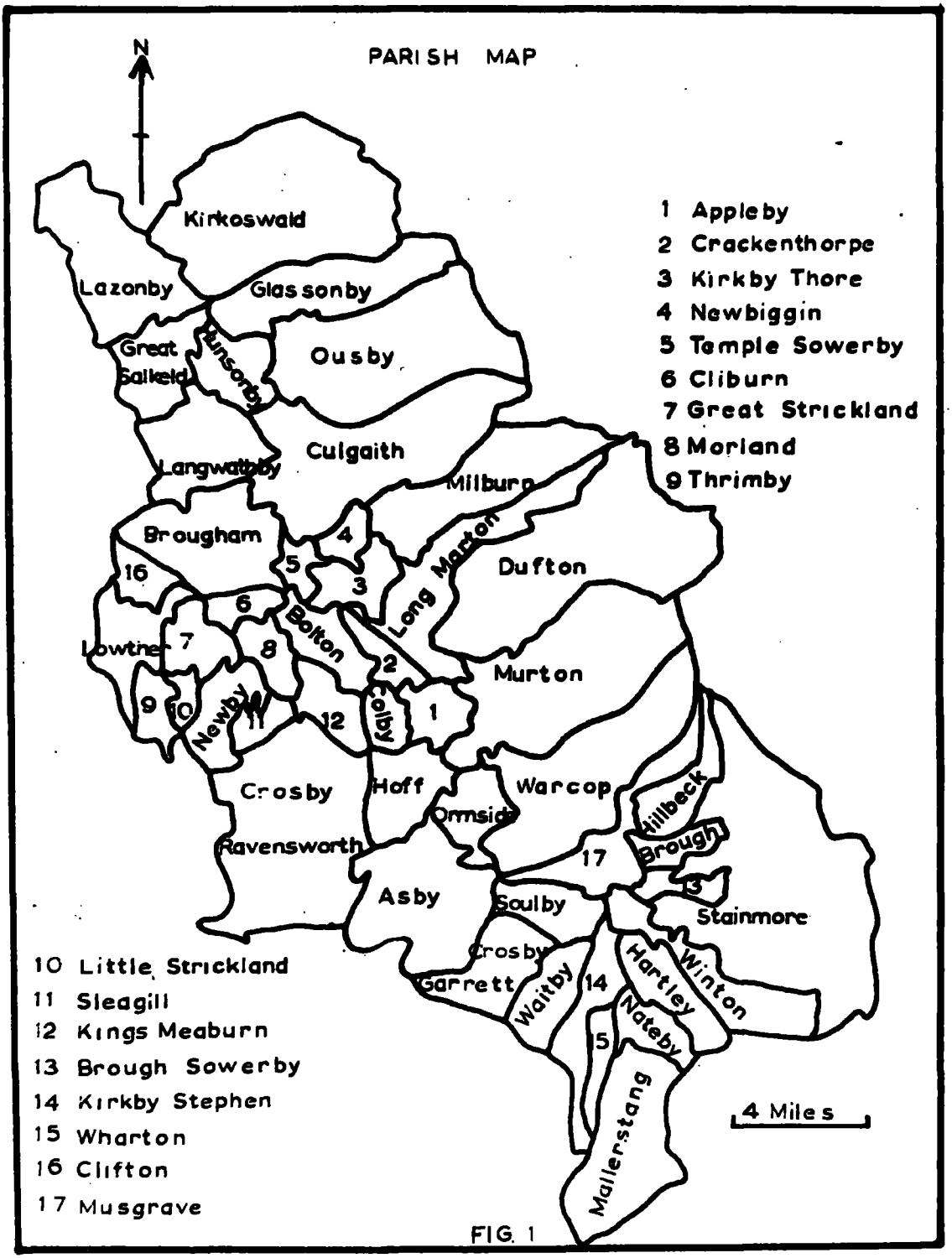

PARISH MAP
N
Kirkoswald
Lazonby
Glassonby
Great Salkeld
Kirkoswald
Ousby
Culgaith
Langwathby
Milburn
Brougham
Long Marton
Dufton
Murton
Bolton
Lowther
Newby
Colby
Crosby
Hoff
Warcop
Ravensworth
Ormside
Asby
Soulby
Crosby
Garrett
Waitby
Nateby
Hartley
Winton
Stainmore
Hillbeck
Brough
Mallerstang
4 Miles
1 Appleby
2 Crackenthorpe
3 Kirkby Thore
4 Newbiggin
5 Temple Sowerby
6 Cliburn
7 Great Strickland
8 Morland
9 Thrimby
10 Little Strickland
11 Sleagill
12 Kings Meaburn
13 Brough Sowerby
14 Kirkby Stephen
15 Wharton
16 Clifton
17 Musgrave

FIG. 1

PART I

THE PHYSICAL SETTING

CHAPTER 1

RELIEF AND DRAINAGE

The physical landscape of the region merits close study. The boundaries of the region are clearly defined physical features (Fig. 2) and within these limits variations in altitude and slope have been the chief factors in the evolution of the pattern of land use and settlement.

The major characteristics of the relief reflect the structure of the region and its recent glaciation. Drainage, though modified by glaciation, is still closely related to structure.

In this Chapter the general characteristics of structure, drainage and glaciation will be considered and this will be followed by a more detailed treatment of slopes and land forms.

Structure

A well defined escarpment, at the base of which is the line of the Outer Pennine Fault, forms the western limit of the Northern Pennines. The uplift of the Pennines along this fault, was completed during the Tertiary earth movements. Along this fault, the Carboniferous rocks in the Vale of Eden were down-thrown some 1500 feet. Both east and west of the Outer Pennine Fault, the dip of the rocks is to the east. (Fig.3).

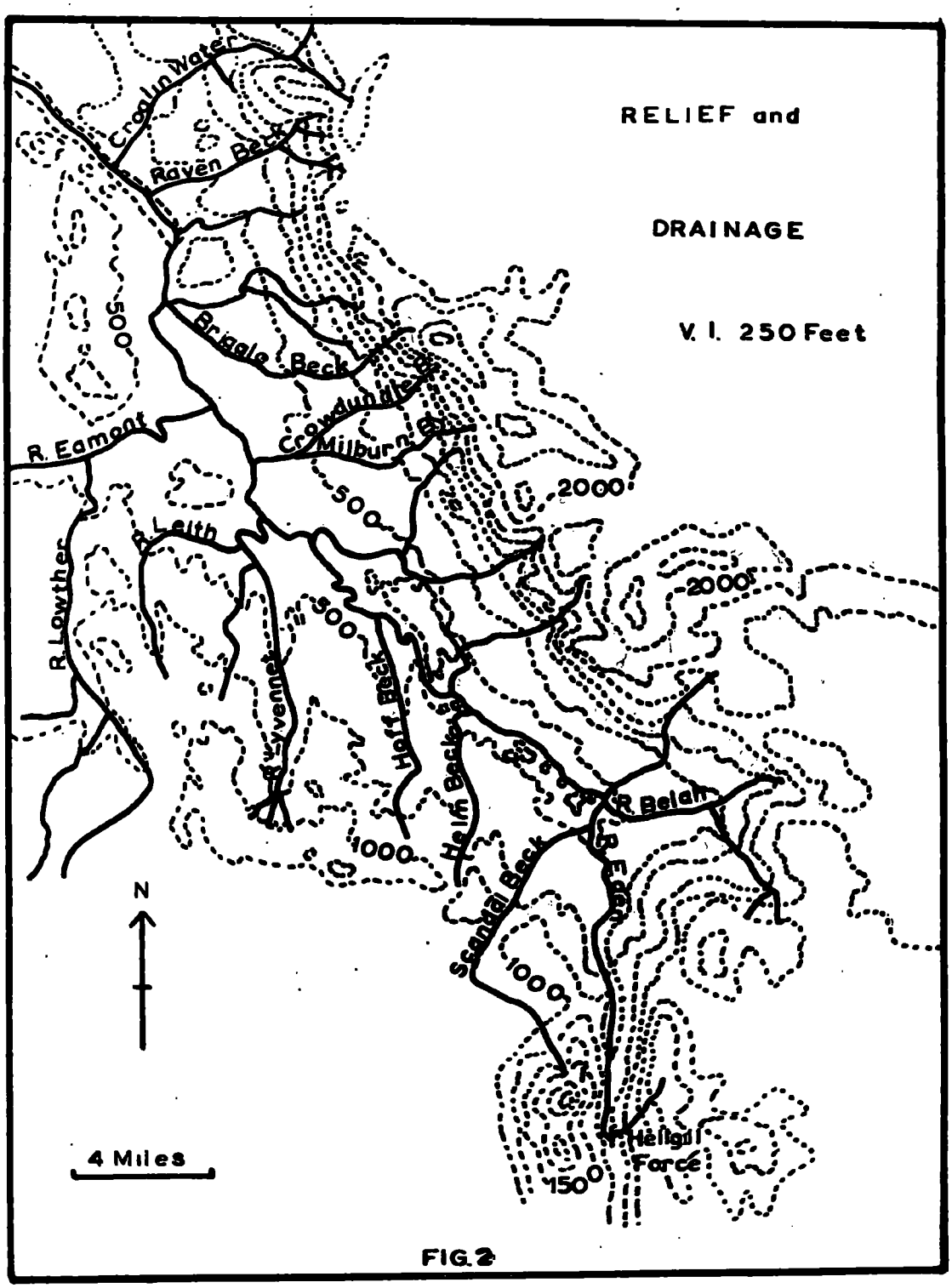
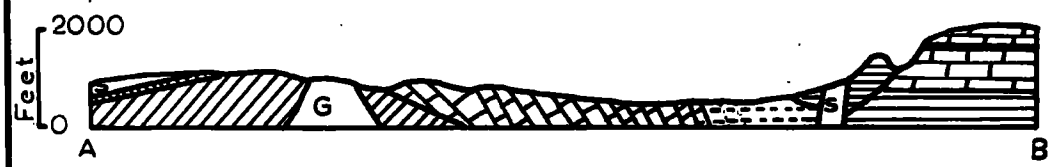

RELIEF and
DRAINAGE
V. I. 250 Feet
Croglin Water
Raven Beck
Briggle Beck
Crowdundale Bk
Milburn Bk
R. Eamont
R. Leith
R. Lowther
R. Yvennet
Hoff Beck
Helm Beck
Scandal Beck
R. Eden
R. Belah
Hell Gill Force
500
1000
1500
2000
N
4 Miles

FIG. 2

GEOLOGICAL SECTION



4 Miles

FIG. 3

In the Northern Pennines, most of the present surface is developed on Lower Carboniferous limestones, sandstones and shales (Fig.4). From the crest of the escarpment, at 2000 feet to 2800 feet, the land slopes gently eastwards to form an extensive plateau. During the Hercynian earth movements, a sill of dolerite was intruded into the plateau. This Sill, known as the Whin Sill outcrops at several places along the escarpment.

West of the escarpment the lowlands are composed of the Permo-Triassic or New Red Sandstones. These include the Penrith Sandstone, Hilton Plant Beds, Magnesian Limestone, St. Bees Shales, St. Bees Sandstone and Kirklinton Sandstone. The Penrith Sandstone forms a 15 mile ridge from Armathwaite to Cliburn and to the south west Carboniferous limestone out-crops once more (Fig.4). Because these rocks dip eastwards, where they outcrop there is now a series of west facing scarps (Fig.2). The Penrith Sandstone scarp and the limestone scarp to the south together form the western boundary of the Eden Valley.

Drainage

The pattern is mainly consequent upon the structure but there are important instances of glacial interference. The Eden itself flowing north-north-west follows a weak bed of shales within the large structural depression. Because it flows in a structural depression the gradient of the river is slight. (Table A).

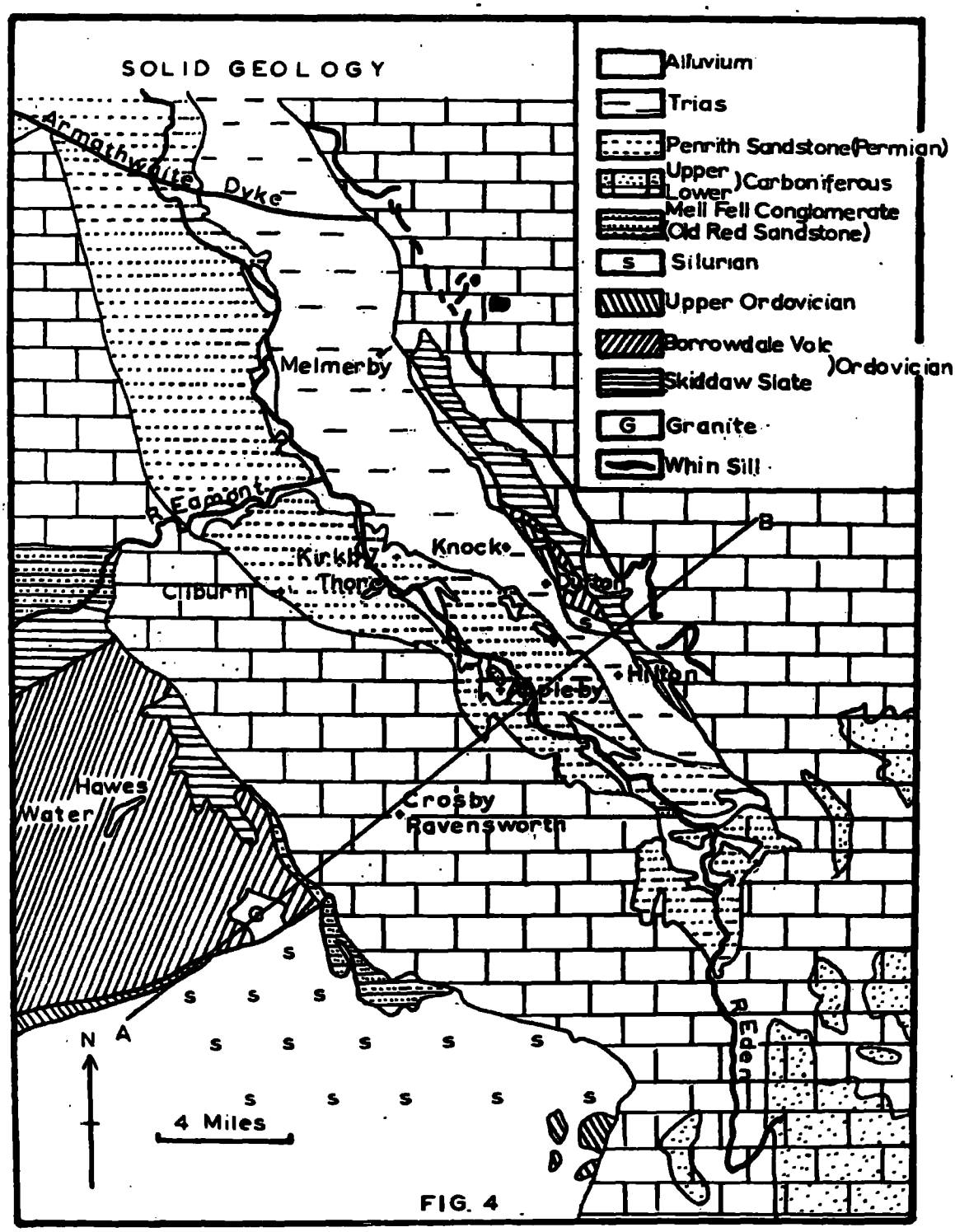

SOLID GEOLOGY
Alluvium
Trias
Penrith Sandstone (Permian)
Upper
Lower
) Carboniferous
Mell Fell Conglomerate
(Old Red Sandstone)
S
Silurian
Upper Ordovician
Borrowdale Volc
Skiddaw Slate
) Ordovician
G
Granite
Whin Sill
Armathwaite Dyke
Melmerby
Eamont
Kirkby Thore
Knock
Cliburn
Appleby
Hilton
Hawes Water
Crosby Ravensworth
A
B
N
4 Miles
S
Eden

FIG. 4

TABLE A

Average Gradients of the River Eden

Area (Fig.2)	Direction of Flow	Gradient
Source to Hellgill Force	South West	1:14
Hellgill Force to Kirkby Stephen	North	1:76
Kirkby Stephen to Kirkoswald	North-north-west	1:626

Since there are important differences the tributaries will be considered in three groups, namely the upper valley streams, the escarpment streams and the dip slope streams (Fig.2).

In the narrow upper valley there are forty-one tributaries. Most of these are between ½ and 1 mile in length and since they pass over several limestone outcrops many are of an intermittent nature. Issuing from well-marked spring lines between 1500 feet and 1750 feet these streams follow a direct course to the Eden and valleys are poorly developed except in the north where there are four larger tributaries flowing from the east. Hellgill Beck is the source stream of the Eden and rises at 2200 feet on the peat hags of Black Fell Moss (8099).

From the Pennine escarpment, twelve major tributaries which rise between 1750 feet and 2000 feet flow west-south-west to the Eden. These streams were initiated on the axis of the uplift of the Pennines which became the primary watershed. In the central part of the valley it is noticeable that the streams

do not flow directly to the Eden but trend instead to the north west, for instance Briggle Beck (5635). This alignment is determined by the many overflow channels, formed at the edge of the retreating ice sheets and trending west-north-west to south-south-east. This group of tributaries are fast flowing and subject to sudden spates. They are powerful corroding agents and their valleys are deeply incised. Larger valleys such as High Cup Nick (7224) and Ardale Beck (6534) were over-deepened and widened by valley glaciers. South of the scarp proper is the Stainmore syncline. Here the Belah and Argill tributaries have a slightly different character in that they form a radial drainage pattern on the northern and eastern slopes of Nine Standards Rigg (8206).

From the limestone and sandstone uplands to the west, the Eden receives fewer tributaries. On the limestone dipslope there are five streams rising at over 1100 feet and draining northwards to the Eden. Although the streams flow through well-defined valleys, there is little surface drainage on the broad interfluves. In the source region of these streams there are many instances of dry valleys, and intermittent drainage. North of the River Eamont the Penrith Sandstone uplands provide only five tributaries, between 1½ and 2 miles in length.

Two other streams complete the drainage pattern. The River

Eamont from Ullswater, being a larger tributary than the others in the radial pattern, has breached the sandstone ridge. Scandal Beck is an important instance of glacial interference. Rising on the western flanks of Wild Boar Fell (7599) the stream originally flowed to the River Lune. During the glacial retreat an ice-dammed lake in the Lune Valley overflowed to the north-east over the limestone scarp. Scandal Beck now flows through the gorge (7206) so formed.

Glaciation

During the main glaciation the Eden Valley was one of the most ice-congested districts in the British Isles.[1] Ice sheets from Scotland, the Lake District, Northern Pennines and Wild Boar Fell, filled the Eden Valley, certainly up to a height of 2000 feet. Above this height all surfaces were ice covered. From the Valley the ice moved eastwards over Stainmore, southwards through the Lune gorge and along the upper Eden valley, and northwards onto the Solway Plain (Fig. 5). The ice shed shown on the map is indicated by the alignment of drumlins and the distribution of erratics.

Because the Pennines were a source region there are landforms of glacial erosion in the six larger valleys and on the high summits of Cross Fell and Mickle Fell (Fig.6). In all these areas there are corrie forms and the valleys have been

1. Trotter, F.M. "Glaciation of Eastern Edenside". Q.J.G.S. vol. lxxxv. 1929.

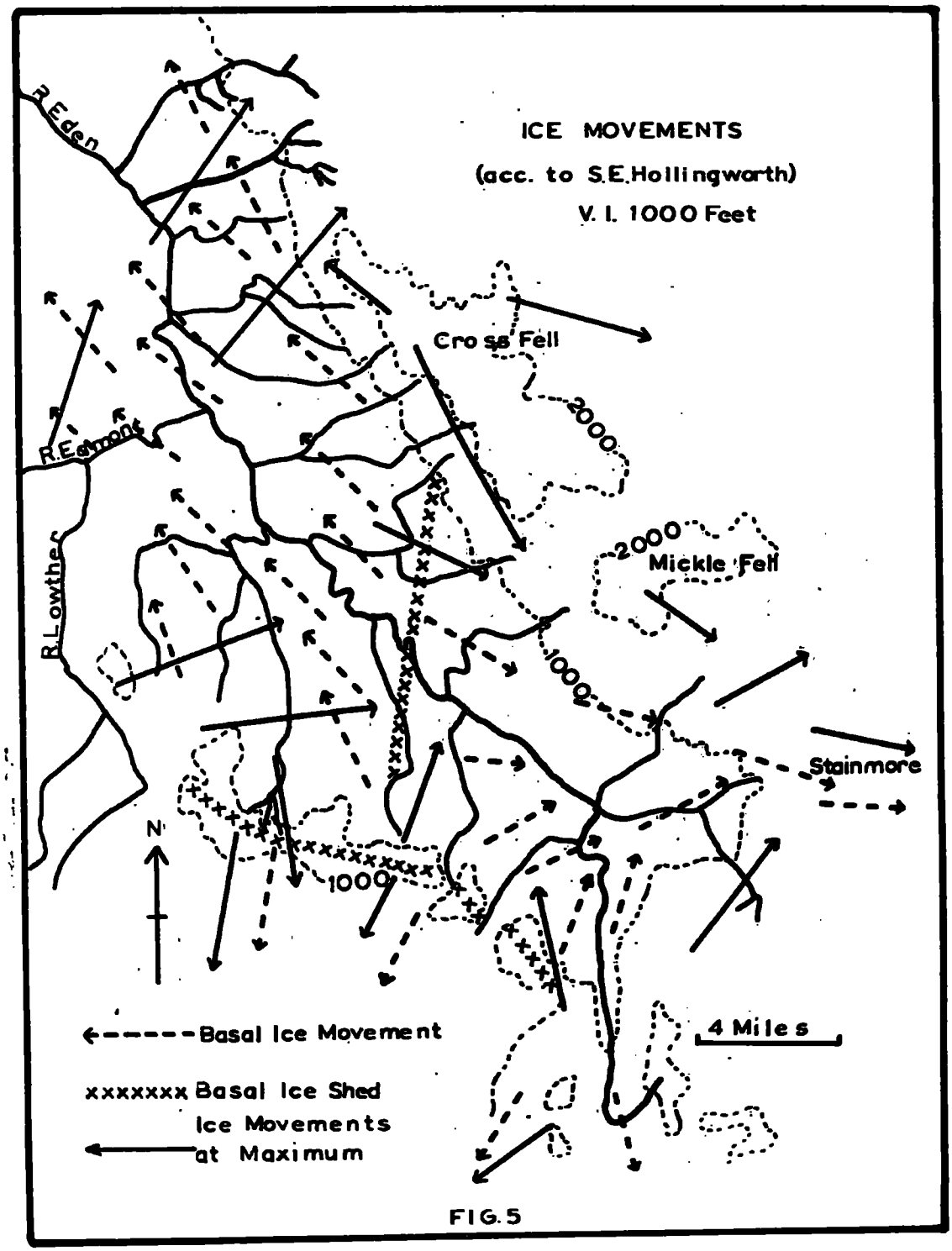

ICE MOVEMENTS
(acc. to S.E.Hollingworth)
V. I. 1000 Feet
R.Eden
R.Lowther
Cross Fell
2000
2000
Mickle Fell
1000
1000
Stainmore
N
4 Miles
Basal Ice Movement
Basal Ice Shed
Ice Movements
at Maximum

FIG.5

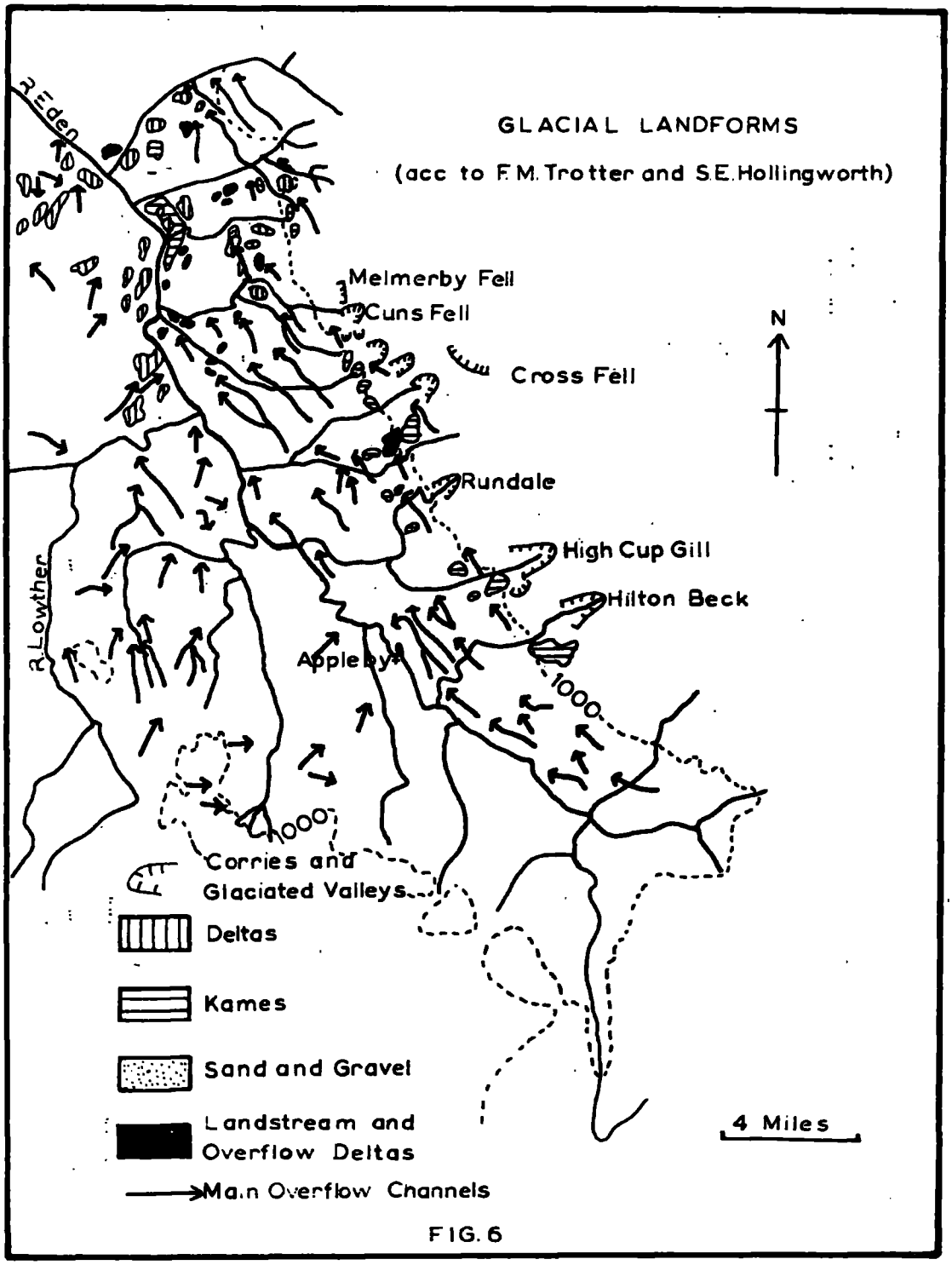

GLACIAL LANDFORMS
(acc to F.M. Trotter and S.E. Hollingworth)
R. Eden
Melmerby Fell
Cuns Fell
Cross Fell
N
Rundale
High Cup Gill
Hilton Beck
R. Lowther
Appleby
1000
1000
Corries and Glaciated Valleys
Deltas
Kames
Sand and Gravel
Landstream and Overflow Deltas
Main Overflow Channels
4 Miles

FIG. 6

over-deepened and widened. Hilton Beck valley (7521) has a stepped floor.

Landforms of glacial deposition and of fluvio-glacial origin are much more common. One of the most characteristic features of the landscape are the extensive drumlin fields (Fig.7). Formed in the ground moraine of the ice sheets these forms are common up to 1000 feet but seldom above 1250 feet. Above 100 feet there are some drumlin forms but more commonly sheets of boulder clay. There are remnants of boulder clay of the first Scottish glaciation, as far south as Brough, but the moraine of the main glaciation is much more extensive. It is made up largely of Lake District and Cross Fell Drift. The latter is characteristic of the scarp foot and it attains its maximum width of two miles at Skirwith (6132), but south of Roman Fell (7520) it is not distinguishable. A careful analysis of the two types of drift was made by Trotter[1] (Table B).

1. Trotter, F.M. "Glaciation of Eastern Edenside". Q.J.G.S. vol. lxxxv. 1929.

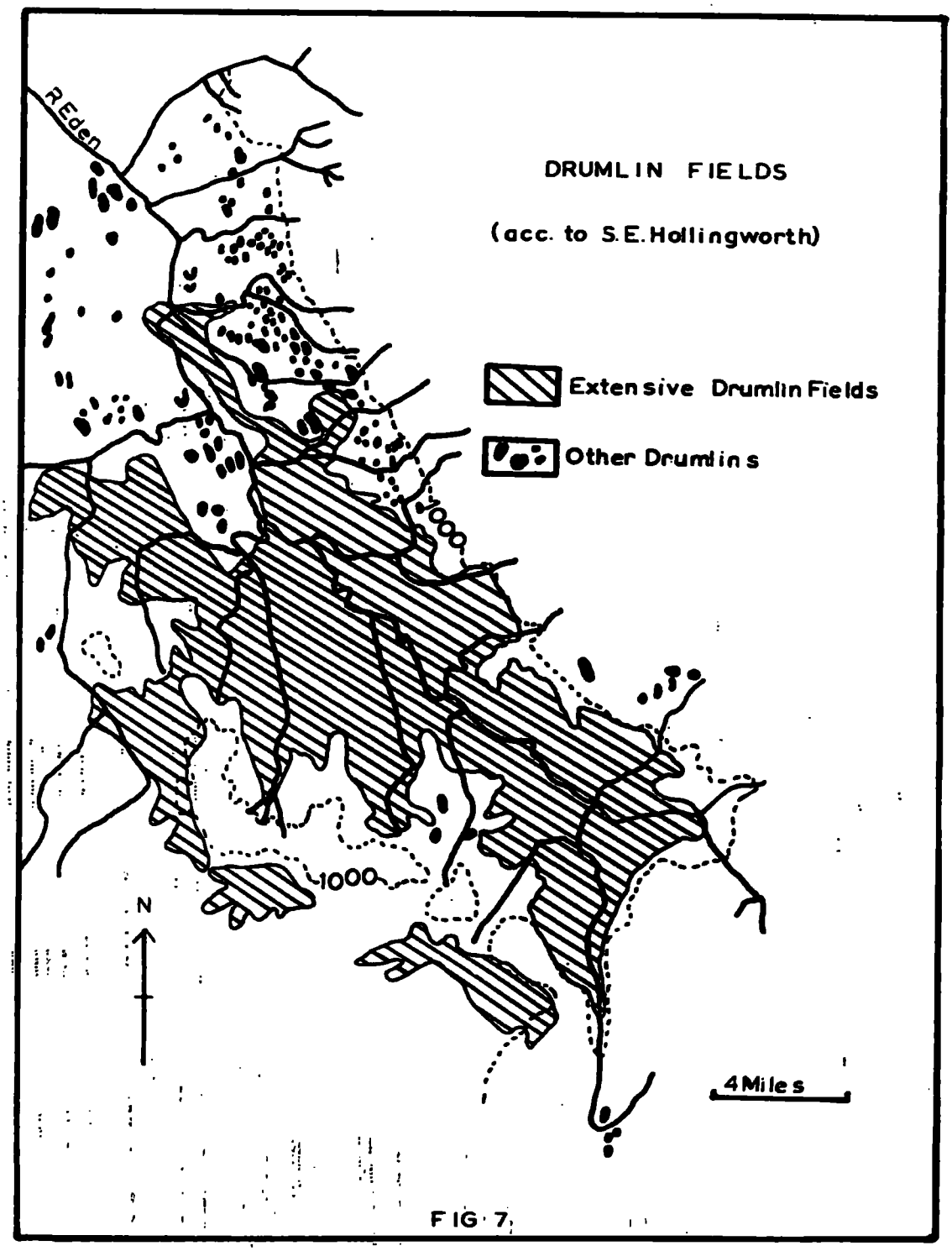

R Eden
DRUMLIN FIELDS
(acc. to S.E. Hollingworth)
Extensive Drumlin Fields
Other Drumlins
1000
1000
N
4 Miles

FIG 7.

TABLE B

Ground Moraine Analysis

Lake District Drift at Staffield (5442)		Cross Fell Drift at Scalehouses (5845)	
Borrowdale Volcanics	?	Carboniferous Sandstones	60%
Penrith Sandstone	10% - 15%	St. Bees Sandstone	15% - 20%
St. Bees Sandstone	5% - 10%	Borrowdale Volcanics	5% - 10%
Carboniferous	5%	Quartz Pebbles	5%
		Some Lower Palaeozic Shale.	

Boulder clay, entirely Carboniferous, is found up to 2000 feet on Warcop Fell (7820) below the peat and in the mountain valleys where it occurs as broad featureless spreads.

The drumlin forms in the area usually have a steep upstream end and the tails point in the direction of the flow. North of Appleby the tails point southwards, south of Appleby they point south-east then east towards Stainmore. The drumlin form is characteristic of most of the minor topography up to 1100 feet.[1] Ground moraine is thickest in pre-glacial depressions. For instance there is a fifty foot cliff of boulder clay in the Eamont Valley (5529). West of the River Eden the average depth is between ten and twenty feet.

Drumlins assume symmetrical and assymmetrical forms and the ratio of length to breadth varies from 1:1 to 6:1, whilst

1. Hollingworth, S.E. "Glaciation of Western Edenside". Q.J.G.S. vol. lxxxvii, 1931.

in height they range from slight swells to over 100 feet. There are many variations in form too, in that although there are single drumlins frequently they are compound or an echelon and even two-tiered. Then again there are both drumlins composed entirely of boulder clay and drumlins consisting of a veneer of boulder clay over solid rock, as at Beacon Hill (5230).

As the ice retreated many fluvio-glacial landforms developed to modify the landscape in a more detailed way. In the Eden Valley, kames and eskers are very common. (Fig.6). Good examples of eskers are to be found in the Croglin Water valley (5646) and along the scarp foot as far south as High Cup Nick (Fig.6).

Another type of deposit is the delta associated with the development of glacial lakes characteristic of the retreat. The lakes developed as the Lake District and Scottish ice sheets retreated west and water was thus trapped between the ice front and the Pennine scarp. The major lake was Lake Eden which shows evidence of shore line levels at 470 feet, 440 feet, 400 feet and 240 to 250 feet. On the floor of the Lake fine sand and laminated clay were deposited. In these lakes deltas developed at successively lower levels (Fig.6). Of greater importance in the interpretation of the present landscape was the development of many overflow channels, generally aligned north-north-west to south-south-east. (Fig.6). These are particularly well developed on the

spurs of the Pennine scarp. The channels trench across every spur on the Cross Fell Inlier and all drain north west.

Hollingworth[1] emphasises that there have been few changes in the landscape which may be termed post-glacial. Instead he regards such changes as late-glacial, for it is only 20,000 years since the maximum glaciation. These late-glacial changes in the landscape include the development of river terraces, so much as feature of the Eden Valley and the deposition of tracts of alluvium along the rivers.

Physical Regions

On the basis of altitude and relief the region can be divided into two major units, the Upper and Middle Valley.(Fig.8). The Upper valley is entirely above 500 feet, distinctively narrow and bordered by high upland areas. Beyond the confines of the Upper valley, bordered by the Pennines and the western uplands is the second much larger region. Within this second region we can distinguish three types of landscape. Below 500 feet is an area of low relief bordering the River Eden. To the west is the usually gently sloping but higher country of the dipslope. East of the river the steep slope of the Pennine scarp and Cross Fell Inlier together form the third region. Thus the Middle valley is better considered as three regions which can be termed the Lowlands, Western Uplands and Eastern Uplands.

1. Hollingworth S.E. "Glaciation of Western Edenside" Q.J.G.S. Vol. lxxxvii. 1931.

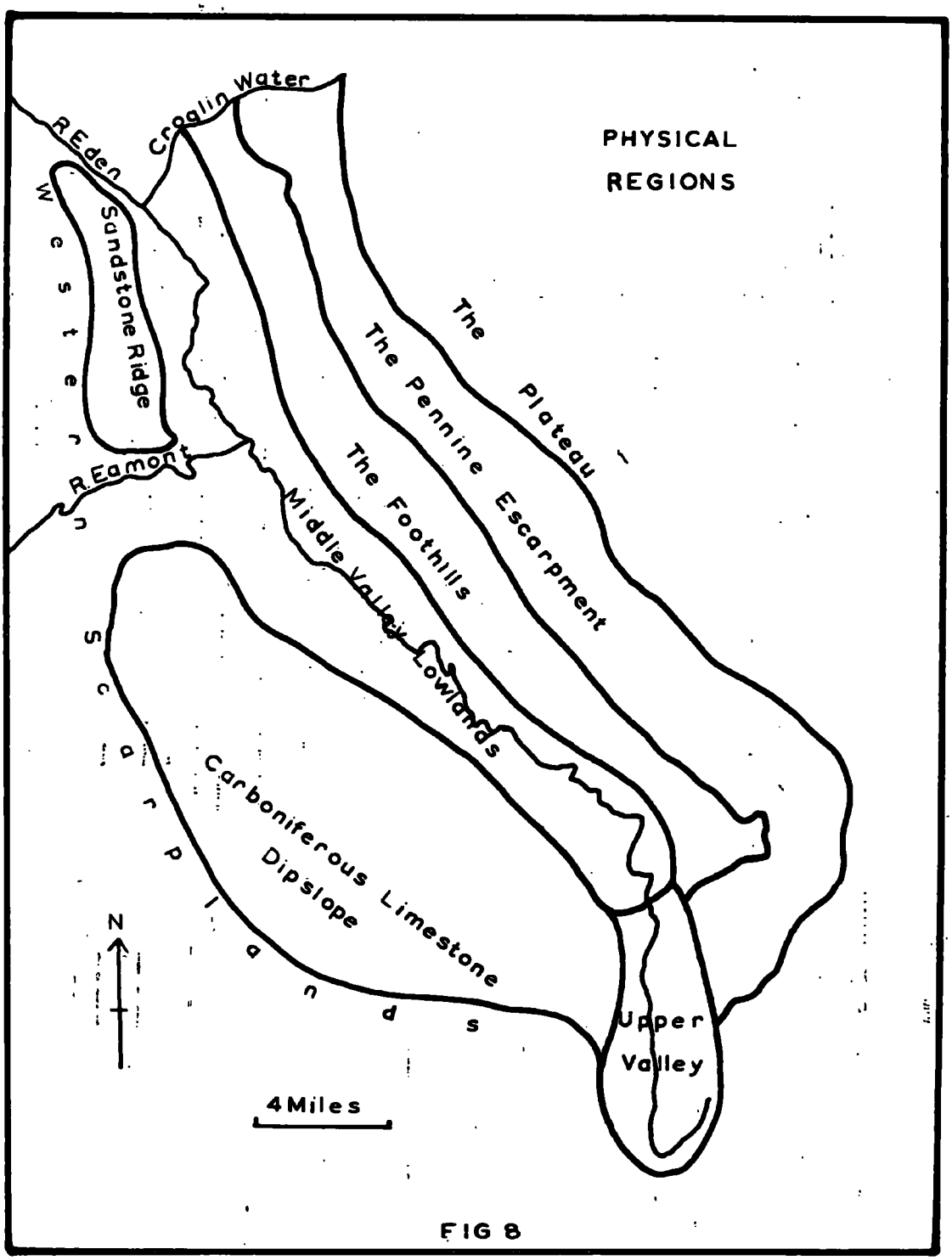

PHYSICAL
REGIONS
Croglin Water
R.Eden
Western
Sandstone Ridge
R.Eamont
The Plateau
The Pennine Escarpment
The Foothills
Middle Valley Lowlands
Scarplands
Carboniferous Limestone
Dipslope
Upper
Valley
N
4Miles

FIG 8

As a result of differences in rock type, slope and landforms, each of these regions has its own characteristic landscape.

Upper Valley

Although a small region this is a most distinctive one of high summits and steep flanks (Fig.9). In some areas there is a small flood plain flanking the River Eden, for instance at Angerholme (7798) where it is some two hundred yards wide. Generally however the floor of the valley is hummocky. Passing onto the softer Penrith Sandstone, the Eden develops a narrow incised course. Limestone "scars" are prominent features of the steep flanks. For instance on the east they occur regularly between 1300 feet and 1400 feet, whilst on Wild Boar Fell west of the river, there are scars at 2000 feet and a summit scar at 2200 feet. Such "scars" are typical of the Lower Carboniferous rocks in which the bands of limestone offer greater resistance to erosion. On the gentler slopes between the scars there is a limited development of limestone pavement, as at Good Wife Stones (7902).

Throughout most of the region, slopes are between 1:3½ and 1:5 (Fig.10), and even steeper on Wild Boar Fell. East of the Eden, above 2000 feet gentler slopes are characteristic of large areas and similarly where the Upper Valley merges into the Lowlands in the north.

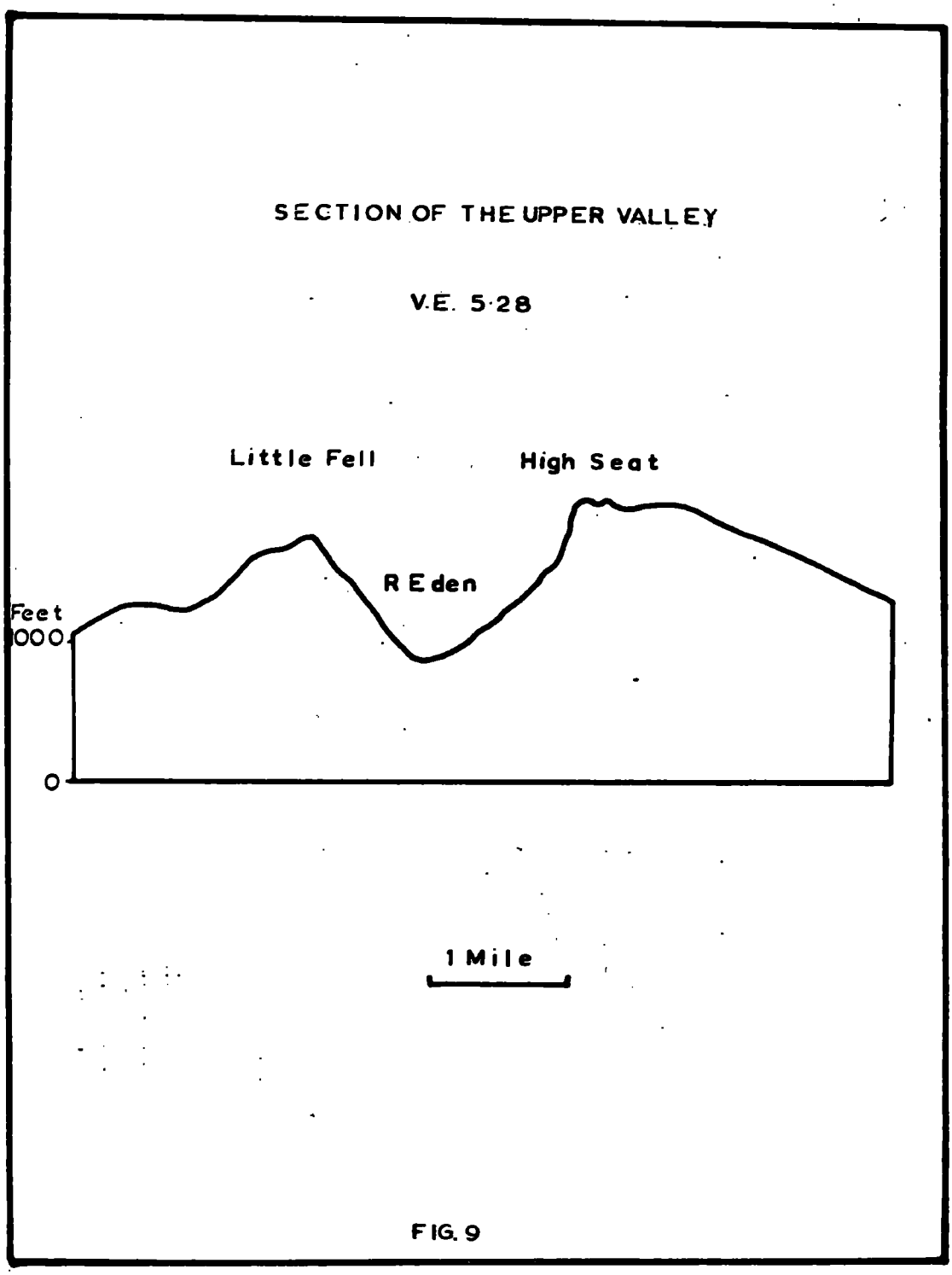

SECTION OF THE UPPER VALLEY
V.E. 5·28
Little Fell
High Seat
R Eden
Feet
1000
0
1 Mile

FIG. 9

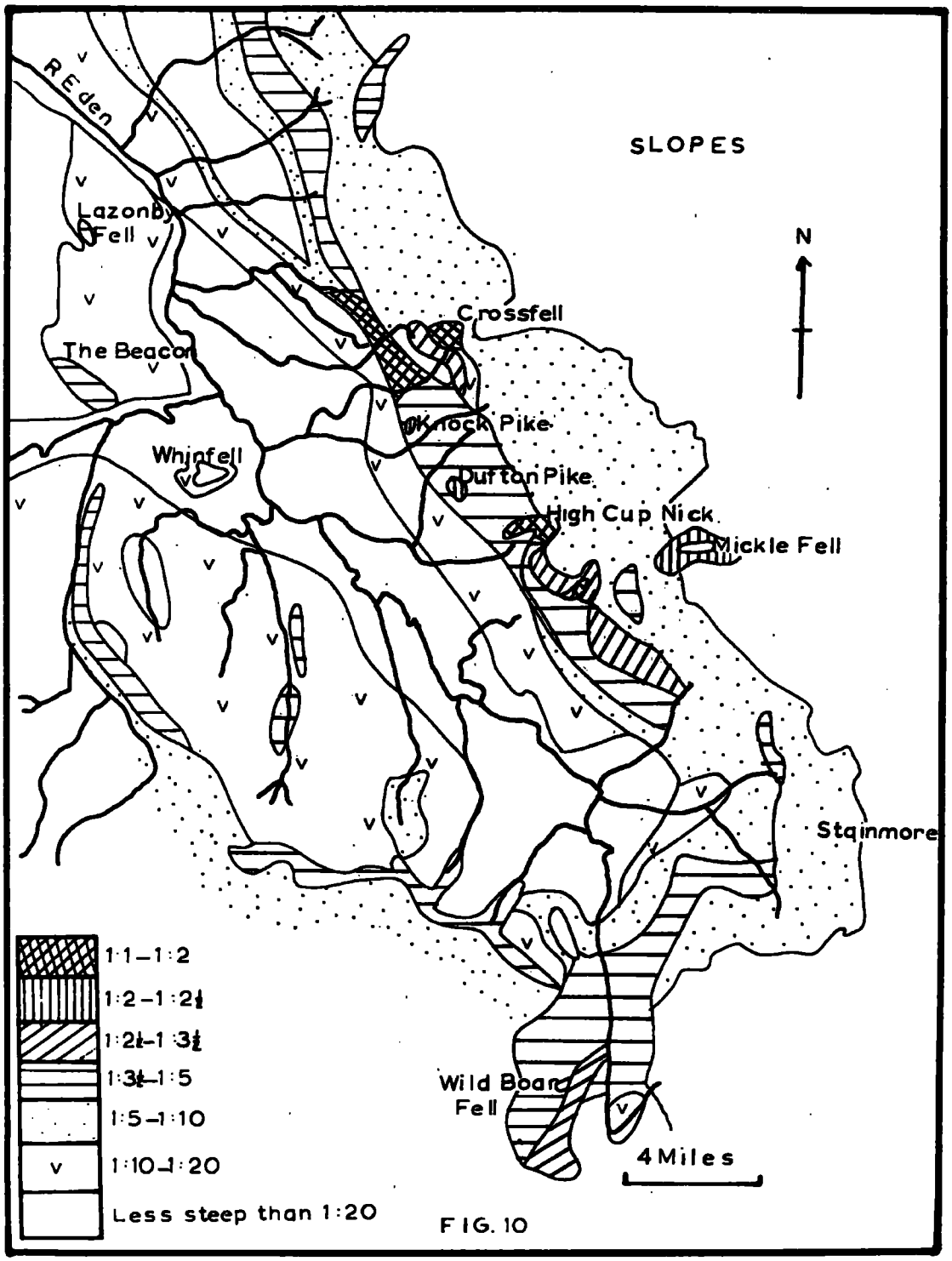

SLOPES
N
R. Eden
Lazonby Fell
The Beacon
Crossfell
Knock Pike
Whinfell
Dufton Pike
High Cup Nick
Mickle Fell
Stainmore
Wild Boar Fell
4 Miles
1:1–1:2
1:2–1:2½
1:2½–1:3½
1:3½–1:5
1:5–1:10
1:10–1:20
Less steep than 1:20

FIG. 10

The steep slopes are the result of valley glaciers moving north and south through the region. Up to about 800 feet there is a mantle of boulder clay which takes a drumlinoid form in the centre and in the south. Assuming an ovoid form the drumlins measure up to five hundred yards in length and have an axial ratio of 2:1. Towards the north the drumlins increase in size.

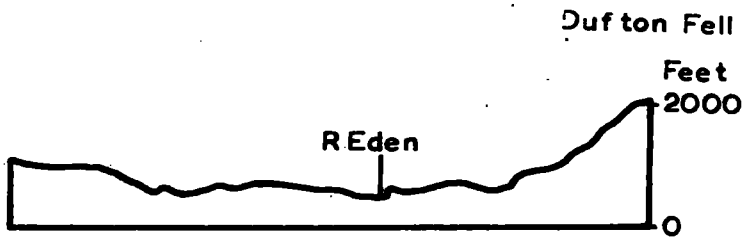
Middle Valley - the Lowlands

Broadening northwards from 1½ miles to 4 miles, the region is 26 miles from south to north and generally below 500 feet. The main river here develops a broad meander tract. Although there is a thick mantle of glacial drift the gentle relief is closely related to the solid geology. This lowland region corresponds with the New Red Sandstones. Near the Eamont confluence the Eden follows the junction between the Penrith and St. Bees Sandstone. (Fig.4). West of the river the 500 foot contour marks the junction between the Penrith Sandstone and the Carboniferous Limestone.

Slopes in the region are generally less than 1:20 (Fig.10 and Figs.11 and 12). Steeper slopes are localised along the river valleys for instance the gorge section south of Appleby (6819). That the slopes are usually gentle is a reflection of several factors. There are few variations in rock type and the river itself has attained maturity. Furthermore the ice sheets smoothed the pre-glacial surface which, according to Smailes,[1]

1. Smailes A.E. "North England" 1960. p.33.

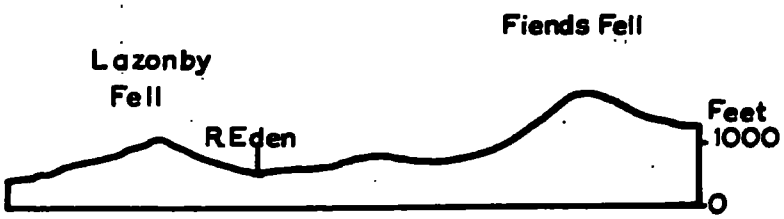
V.E. 5·28



SECTION OF THE MIDDLE VALLEY NORTH OF APPLEBY

3 Miles

FIG. 11



SECTION OF THE MIDDLE VALLEY NORTH OF LAZONBY

3 Miles

FIG. 12

was in a stage of mature dissection. Finally the thick cover of ground moraine masks the irregularities in the solid rock surface. Here the glacial lakes lingered longest and their former floors now form broad tracts of level country, for instance north of Langwathby (5633).

The Middle Valley - Western Uplands

Entirely over 500 feet and roughly triangular in shape, this region measures 26 miles from south to north and in width tapers from 10 miles to 2 miles in the north. This upland area is divisible into the Penrith Sandstone ridge in the north and the larger area of Carboniferous limestone in the south.

An impressive limestone scarp marks the boundary in the south and west. The scarp crest is here dissected into widely separated summits ranging in height from 1168 feet to 1352 feet. Many of the cols between the summits were former overflow channels. In the case of Potts Beck (7008) and Scandal Beck (7207) the channels are very deeply incised. In the south the scarp slopes from a height of 800 feet at its base to over 1000 feet above sea level. To the west the River Lowther, flowing along the foot of the scarp, follows the junction between the Carboniferous and the Silurian rocks of the Lake District. The limestone scarp, forming the western boundary of the region, trends from south east to north west

and is a prominent relief feature throughout its length. Its summit declines in altitude from over 1000 feet in the south east to between 500 and 750 feet in the north west. From the scarp crest the land falls gently towards the River Eden and above 750 feet this dip slope is largely undissected. Characteristic of the dip slope are a large number of Shap Granite erratics,, extensive areas of limestone pavement (6310) and dry valleys (6611).

North of the Eamont the sandstone uplands are both smaller and more irregular, owing to the presence of numerous glacial overflow channels.

Over the Western Uplands as a whole slopes are gentle, gradients ranging from 1:10 to 1:20. Steeper slopes are characteristic of the scarp faces and the river valleys of the dip-slope country. (Fig.10). South of the Eamont the drumlin is the characteristic feature of the landscape below 1000 feet. (Fig.7). On the lower sandstone uplands there are fewer drumlins but more fluvio-glacial sands and gravels. Because the ice sheets retreated quickly up the limestone dip slope there is a reduction in the amount of frontal deposits.[1]

The Middle Valley - Eastern Uplands

Rising to over 2000 feet the region is some 6 miles broad

1. Hollingworth S.E. "Glaciation of Western Edenside". Q.J.G.S. vol. lxxxvii. 1931.

and 26 miles from south to north. Relief here is much bolder than in the west and in several respects is comparable to that of the Upper Valley.

The area below 750 feet forms a foothill zone in which the predominant feature is a thick cover of drumlinised boulder clay. Above 750 feet the landscape is much more rugged for it includes the Pennine scarp and the Cross Fell Inlier. The scarp rises to over 2000 feet and the outcrops of more resistant sandstones and limestones form bold "scars". More steep slopes are to be found in the deep ravines of the major tributaries. East of the scarp crest there is an extensive plateau sloping gently to the east. The highest points of the scarp and the plateau, are summits of Millstone Grit rising above 2000 feet, for example Cross Fell, 2930 feet and Mickle Fell 2591 feet. North of Cross Fell the scarp crest deereases in height and there are no dominating summits.

Along the foot of the scarp for the 16 miles between Melmerby (6137) and Roman Fell (7520) is the remarkable geological formation known as the Cross Fell Inlier (Fig.4). The landscape of the Inlier is quite unlike any other in the area for it is composed of rocks characteristic of the Lake District and much older than those which surround it. Running through the Inlier the Middle Pennine Fault separates the Skiddaw Slates from the newer Borrowdale Volcanics and Silurian rocks. Not only do these

older rocks form bold pikes along the front of the scarp but the maze of faults marks the position of deep depressions between the pikes and at the eastern edge of the Inlier. For instance the smooth slopes of Murton Pike rising quickly to 1950 feet are formed of Weathered Skiddaw Slates whilst Dufton Pike (7026) and Knock Pike (6828) are composed of Borrowdale Volcanics. Notable depressions developing along the Middle Pennine Fault are found between Dufton Pike and Brownber (7027). These depressions were deepened by melt water streams and now are prominent features of the Inlier. (Fig.6).

Below 750 feet slopes are generally between 1:10 and 1:20 but at 750 feet there is a sharp break of slope and above this height gradients are usually between 1:3½ and 1:5. (Fig.10). Even steeper slopes are found on the western flanks of Cross Fell (6834), High Cup Nick (7325), Hilton Beck Valley (7522) and at several places on the main escarpment south of Hilton Beck. Beyond the crest of the scarp the land falls more gently eastwards except on the flanks of the monadknock Mickle Fell (8024) where slopes are in excess of 1:3½.

That the region is one of steep slopes is the result of several factors. Many of the river valleys on the scarp slope are steep-sided and the six larger valleys were also subjected to erosion by valley glaciers. The old rocks of the Cross Fell Inlier have weathered into imposing peaks. Finally melt-water

channels on the scarp developed along fault lines to emphasise the break between the scarp and the Inlier and also within the Inlier.

In the Eastern Uplands there are instances of glacial and fluvio-glacial deposition. Usually these landforms serve to soften the relief. Drumlin fields are characteristic of the foothill belt and in the south are well developed up to 1000 feet O.D. In the northern part of the region above 600 feet the drumlins are more scattered and in general they are small. Round Ousby (6134) the drumlins are between ten and fifteen feet high and up to 200 yards long, with a ratio of 3:2. Instances of fluvio-glacial landforms are the kames at the entrance to High Cup Nick (7223) and Hilton Beck (7421) and the lacustrine deltas north and south of Knock Pike (6828) (Fig. 6).

CHAPTER 2

CLIMATE

Situated in the east of Westmorland and Cumberland and surrounded by higher land except to the north, the region has a distinctive climate.

Winter temperatures are lower than on the Cumbrian coastal plain, Solway Plain and in the Lake District at comparable altitudes. For most of the region the annual rainfall is between 35 inches and 50 inches. The Solway Plain has less than 35 inches in one area less than 30 inches, and in the Lake District it is generally over 50 inches. Only the western coastal plains have a comparable total.

Rainfall

The total rainfall and to a lesser degree its distribution over the year are closely related to altitude. Rainfall decreases from the Upper valley north and from the east and west towards the River Eden. (Fig.13).

In the upper Eden on the valley floor the total rainfall increases from 40 inches in the north to over 60 inches in the south, whilst on the slopes above 1500 feet totals increase from 50 inches to over 60 inches. In the middle lowlands Kirkby Stephen in the south at 594 feet has 41 inches whereas Nunwick Hall (at 300 feet) in the north has 32 inches. (Fig.13).

CUMBRIA

MEAN ANNUAL RAINFALL

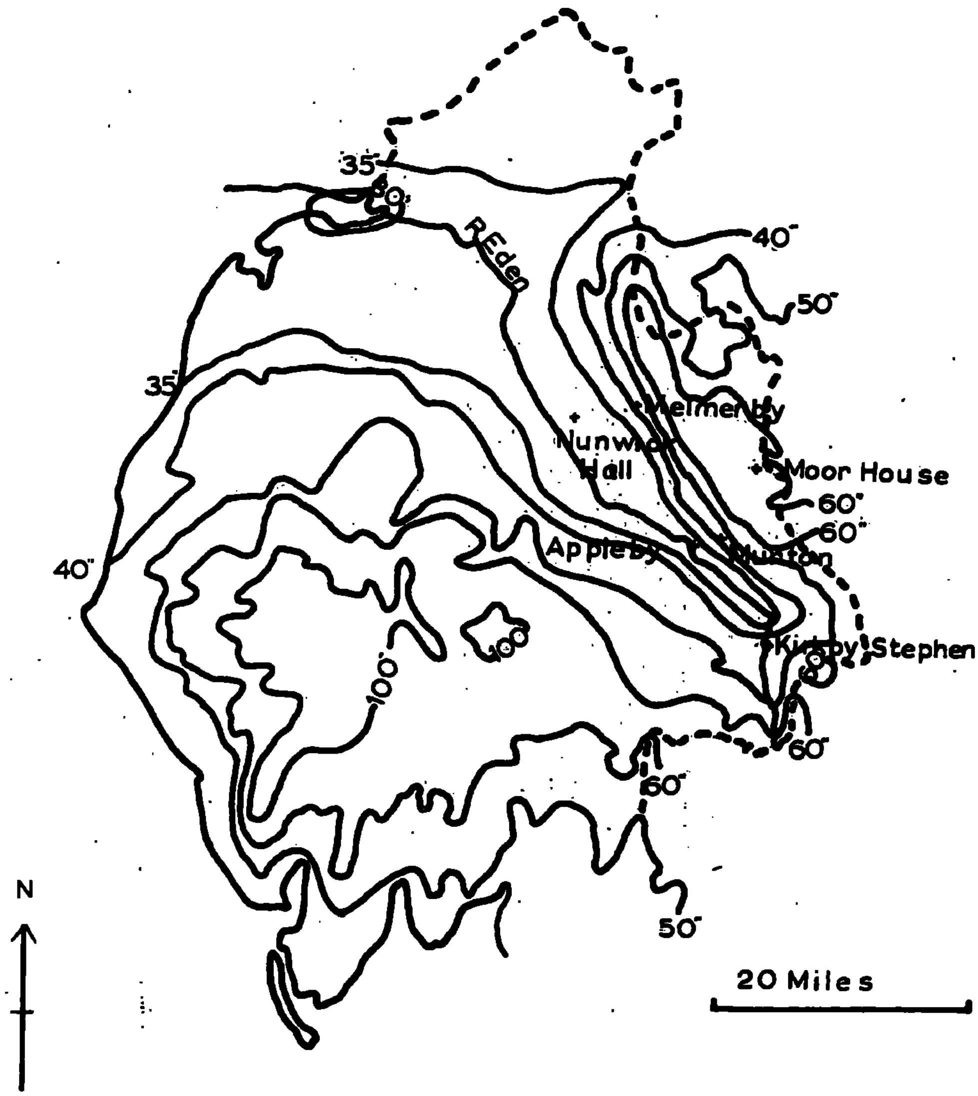


FIG. 13

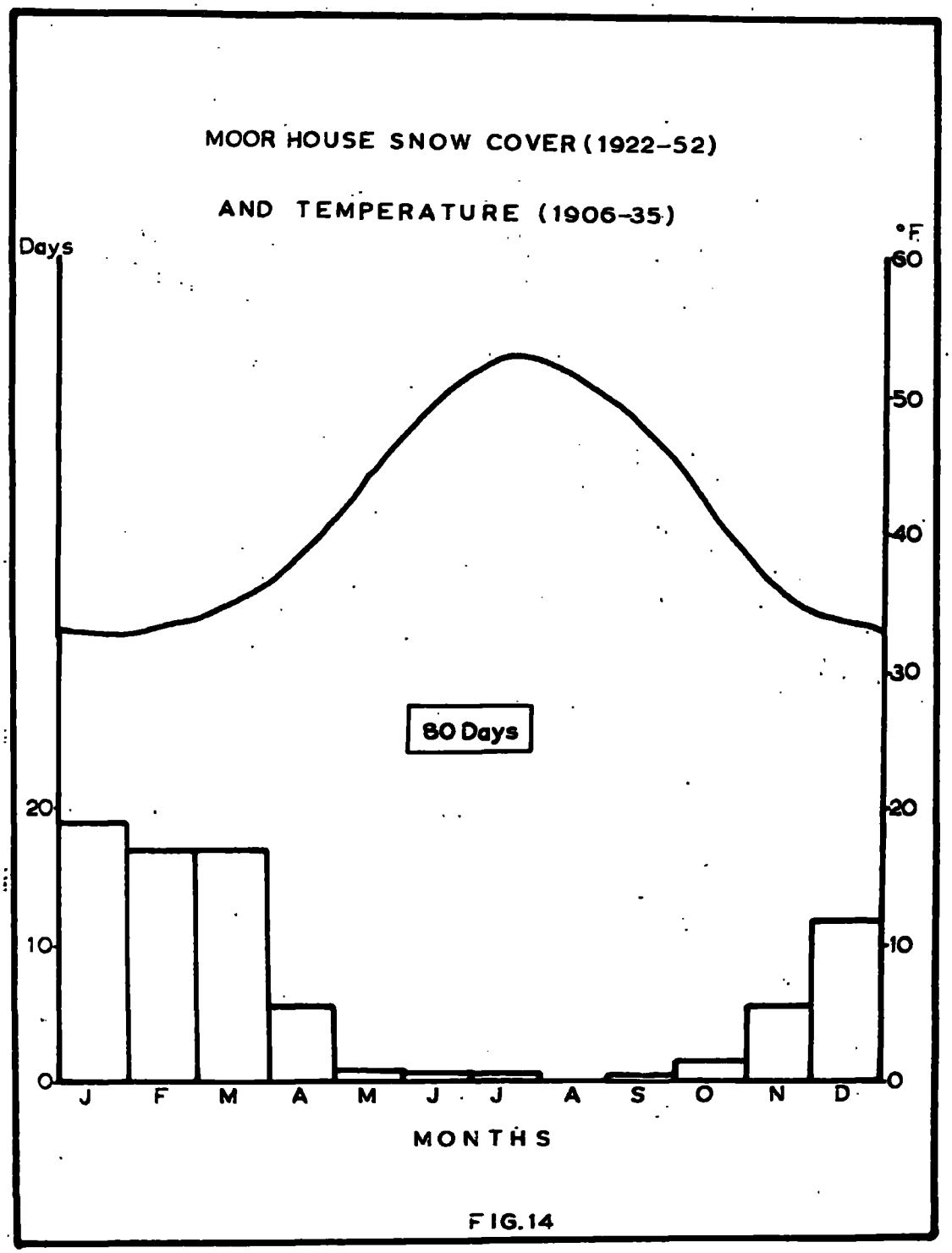

MOOR HOUSE SNOW COVER (1922–52)
AND TEMPERATURE (1906–35)
Days
°F
60
50
40
30
20
10
0
80 Days
20
10
0
J F M A M J J A S O N D
MONTHS

FIG. 14

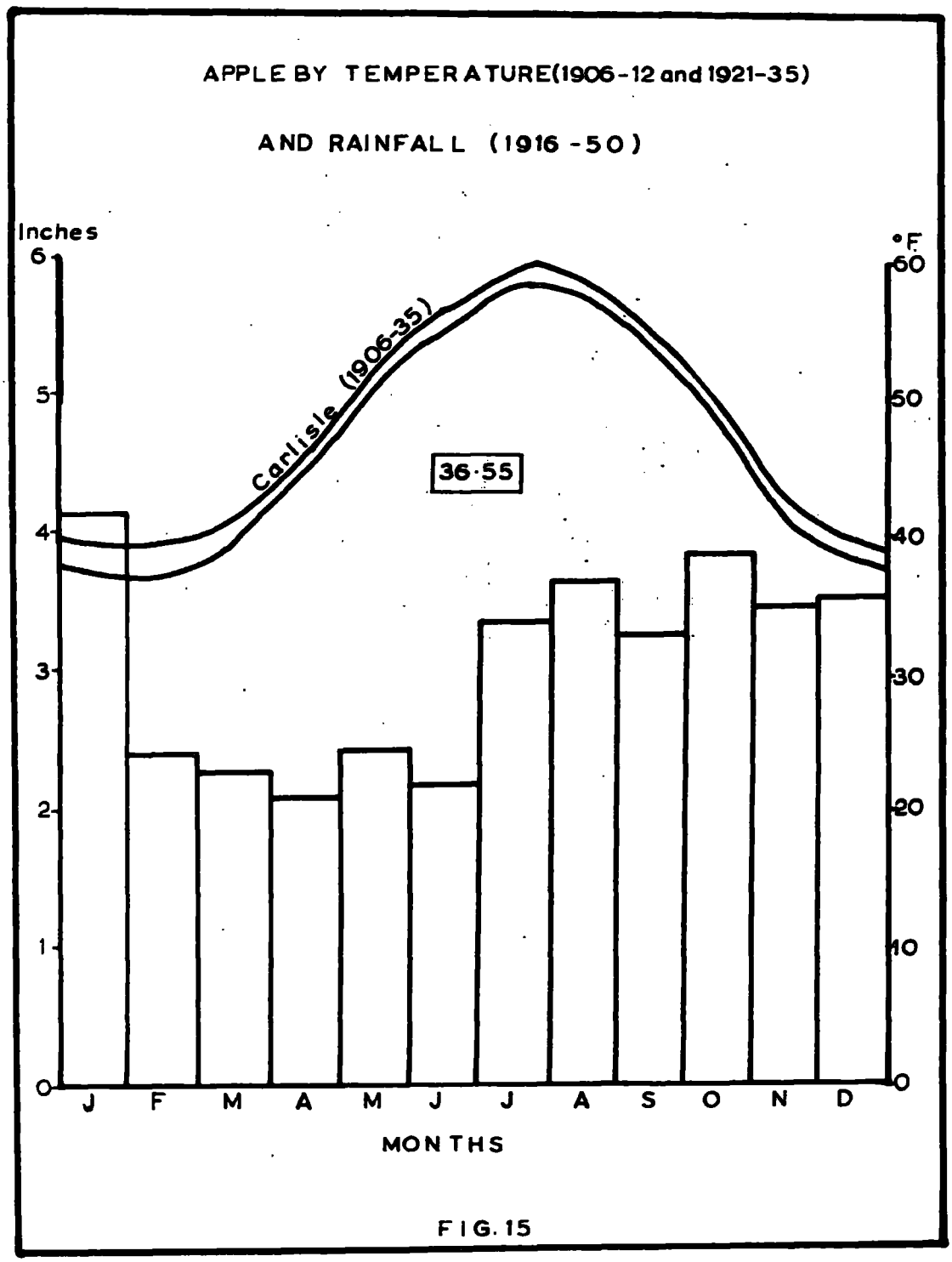

APPLE BY TEMPERATURE(1906-12 and 1921-35)
AND RAINFALL (1916-50)
Inches
°F
Carlisle (1906-35)
36·55
J F M A M J J A S O N D
MONTHS

FIG. 15

On the Western Uplands between 750 and 1100 feet the average rainfall is between 35 and 50 inches. On the higher Eastern Uplands the rainfall is heavier and Moorhouse at 1840 feet has 68 inches.[1] Moorhouse is actually in the lee of the escarpment lying as it does east of Great Dun Fell 2780 feet. Appleby beside the river Eden at 440 feet has an average of 37 inches. (Fig.15).

In both the lowlands and the uplands most of the rain falls between October and January. (Fig.15). In Appleby this amounts to 41%. August is usually the second wettest month in the lowland areas. The cloud and rain during August would seem to explain why oats remain the main cereal, in preference to wheat or barley. The main crop in the area is hay and on the higher land the hay harvest can be a difficult and protracted business. A feature of the climate is the tendency to drought in the late Spring and early Summer. This can be serious for the two staple crops, hay and roots. By estimation there are between eight and ten thunderstorms a year. This is rather less than in the other lowlands of North Western England.[2]

Snow

According to Manley,[3] for the areas above 200 feet the

1. "The Land of Britain" Parts 49 and 50. 1943, p.279
2. "The Land of Britain" Parts 49 and 50. 1943. p.276
3. Manley G. "Climate and the British Scene". 1955, p.201

correlation of altitude and snowfall is one day for each 50 feet.

In the lowlands of the middle valley snow falls on twenty to thirty days and in the upper valley twenty-five to thirty-five days. At 500 feet snow covers the ground on an average of fifteen to twenty-two days. With increased altitude there is a rapid rise in the frequency of snow fall and the duration of snow cover. Above 1500 feet snow covers the ground on fifty days and at 2000 feet eighty five days. On Cross Fell summit, 2930 feet there are one hundred and twenty days with a snow cover. The duration of snow cover accordingly reduces the season for sheep grazing on the high fells, and thus the Pennine farmer is at a disadvantage as compared with the farmer on the uplands west of the Eden. Figure 14 shows the number of days when snow covers the ground at Moorhouse. Only August is entirely free from snow. Severe blizzards of short duration can be encountered on the high fells in June and July.

Temperature

Temperatures at Appleby (Fig.15) illustrate the conditions typical of the lowlands. Five months have mean temperatures over 50°F, July being the warmest with an average of 58°F. February is the coldest with an average of 37°F. During the period of accurate records the July mean maximum is 66·5°F. and the mean minimum for February is 31°F.

Moorhouse records bring out the much harsher conditions of the Uplands (Fig.14). Only three months have means above 50°F. The February mean is 32°F and that of July is only 53°F. From these figures the average lapse rate is 1°F. for every 280 feet of altitude.

If we generalise it may be stated that the minimum growth temperature for grass and other similar plants is 42°F. The effective growing season is thus the period during which the daily mean temperature rises above 42°F. There is a rapid diminution in the effective length of the growing season from more than 200 days in the lowlands below 700 feet (1st April to 14th November), to 165 days at Moorhouse (5th May to 28th September) and 128 days on the Pennine summit of Dun Fell 2780 feet (23rd May to 28th September).[1]

The lowlands in the middle valley experience the most extreme temperatures. In summer there are usually several days with maximum temperatures above 70°F. and severe frosts are characteristic of the winter. One of the major reasons for the low winter temperatures is the nature of the relief. Cold air from the uplands drains into the valley and there is no southward or westward outlet. In the valley the extensive drumlin fields and the incised river valley make for classical frost pockets, and temperature inversions readily develop.

1. Smailes A. E. "North England" p.52. 1961.

Appleby is one of the most frosty stations in the Northern Counties.[1] The region has winters as cold as any area in England and Wales. Frosts in Spring and Autumn are recognised as a local hazard. For instance there were 19 degrees of frost on May 18th 1891. Even in June early potatoes have been damaged. Within the lowlands local variations in topography cause great differences in frost incidence. Another important difference is that the uplands, particularly in winter, experience a much lower diurnal range of temperature, largely owing to greater frequency of cloud cover and increased wind speed.

Sunshine

May and June are the sunniest months in most years and under anticyclonic conditions all regions receive a comparable amount. Since however unsettled low pressure conditions are more common the uplands are more frequently in cloud than the lowland areas. Westerly air streams rising over the Pennines and reaching saturation point give cloud over those uplands but not in the valley as a whole. Thus whilst Appleby has some 1350 hours of sunshine annually, the land over 1500 feet has less than 1000 hours.

Wind

Over the year as a whole the prevalent wind is a south

1. "The Land of Britain" Parts 49 and 50. p.278.1943.

westerly one, although during the Spring there is a high proportion of north and east winds. In this instance too the land over 1000 feet is distinctive for there are few days in the year when no wind is experienced. Exposure to wind imposes a notable check on tree growth, and only in sheltered places are trees found up to 1500 feet.

Of particular interest in the region is the Helm Wind. This cold wind is a feature of the Spring and to a lesser extent the Autumn. A Helm Wind develops given a steady north-easterly wind of at least Force 4 and when there is a temperature inversion in the Eden Valley. (Fig.16). Given such an inversion layer, wind descends the scarp slope more forcibly. It is evident that the escarpment lying transverse to the wind acts like a submerged weir in a stream of water: a standing wave is set up just below the weir.[1] Consequently a thick roll of cloud develops along the escarpment - the Helm. To the west is another smaller roll, the Bar. The clear sky between the two clouds is associated with the descending air.

A true Helm Wind is a very strong wind, often of gale force, at the foot of the scarp. Yet in the valley the air may be quite still. The Helm is most common between Melmerby and Murton where the Pennines are highest. In this part of the region windbreaks are a common element in the landscape. Many

1. Manley G. "Climate and the British Scene" p.148 1955.

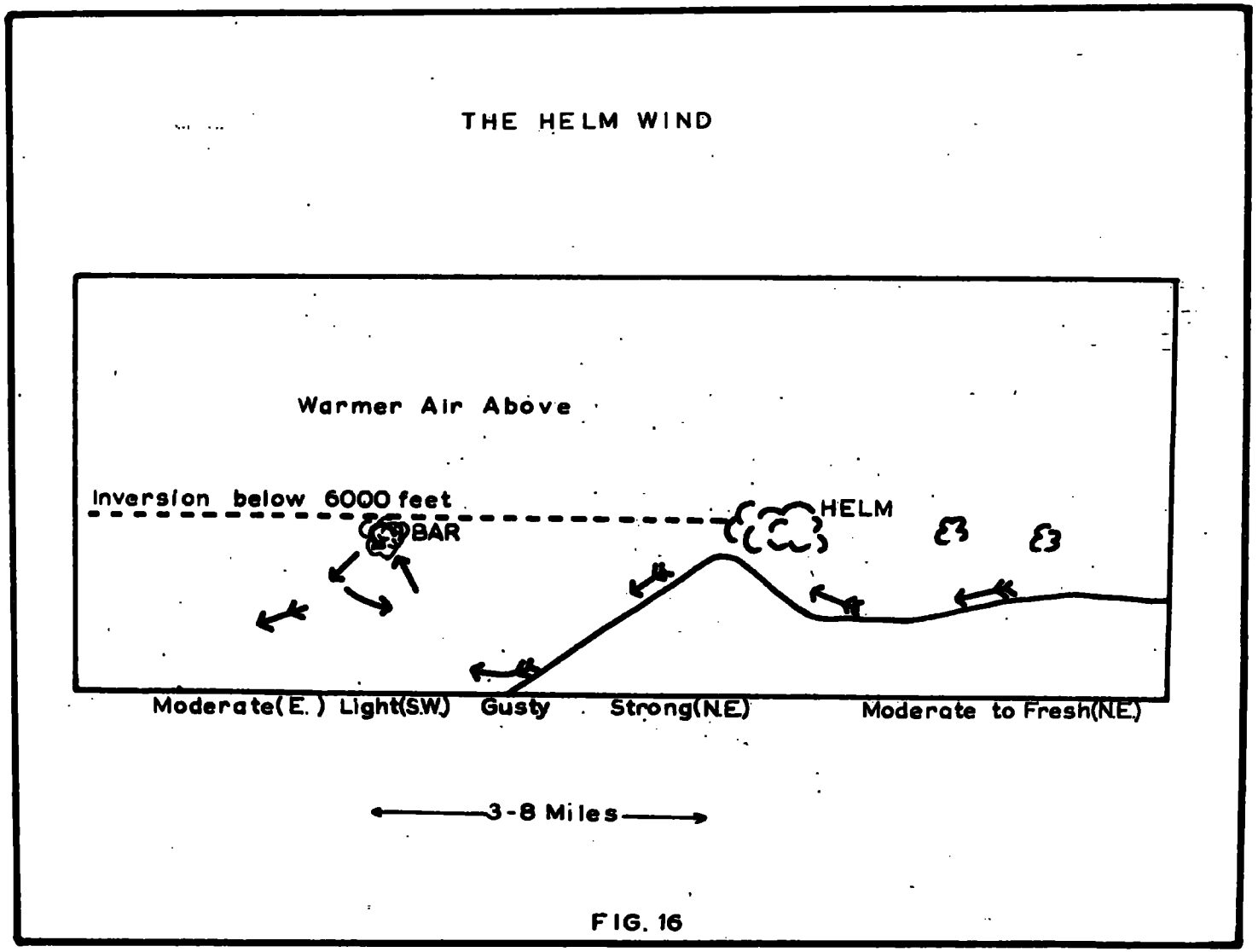

THE HELM WIND
Warmer Air Above
Inversion below 6000 feet
BAR
HELM
Moderate(E.)
Light(S.W.)
Gusty
Strong(N.E.)
Moderate to Fresh(N.E.)
3-8 Miles

FIG. 16

dwellings have no doors or windows on the east wall. In Blencarn village (6331) virtually all the houses turn their back to the fells.

A prolonged Helm Wind can be disastrous for the fellside farmer. The Helm can blow for days or even weeks. Because it is a cold wind grass growth is quickly halted and because it is strong and dry the evaporation rate is rapid. Ewes in lamb can be deprived of pasture and they lose condition quickly unless compensated in some way. An Autumn Helm can be an advantage because the fellside farmer may be able to harvest his few acres of grain while the valley farmer is waiting for a drying wind. In winter the Helm Wind can mean disastrous snow drifting along the fellside roads. The roads run roughly parallel to the scarp and in between the dry stone walls the snow collects quickly. Traffic is seriously impeded and frequently stopped completely for several days at a time. A snow fence erected between Hilton and Murton in 1963 has proved most effective.

The Moorland and Mountain Climate

In addition to higher rainfall totals the distinguishing features are the prevailingly low maximum and especially in winter the low dirunal range of temperature. A thick cloud cover and prevailingly strong winds are the explanation. On

the high summits the average wind speeds are normally twice those in the lowlands. Thus on the uplands little heather is found above 2000 feet and trees even if sheltered cannot grow above this height. On the gentler slopes of the Western Uplands and in the eastern foothills the land use potential depends not only on climate but on soil quality and drainage. In these areas in contrast to the uplands, climate alone does not limit land use so rigorously.

CHAPTER 3

SOILS

Although a modern soil survey on the basis of soil profiles has not been attempted in the region there is some information. A reconnaissance soil survey based primarily on texture was carried out by Bainbridge.[1]

Under the prevailing conditions of heavy rainfall and long periods of cloud cover, soils generally suffer from leaching. On the basis of differences in texture the soils can be considered in four groups, and the distribution of these four groups is shown in Fig. 17.

Alluvial Soils

On the lowlands flanking the Eden and in the larger tributary valleys there are large areas of alluvial soils. Commonly they extend up to ½ mile on both sides of the Eden in the north, beyond the Eamont confluence. Although the alluvial soils vary in constitution they are often gravelly loams.[2] As compared with the adjacent areas the flatness of the alluvial tracts and their relative fertility make them valuable agriculturally. Where liable to flooding or where the water table is high they are used for grass, otherwise they afford good arable land.

1. Bainbridge T.H. "The Soils of Cumbria: A Preliminary Study" Empire Journal Exper.Agric., vii, 1939 p. 175-183.
2. Smailes A.E. "North England" p.58, 1961.

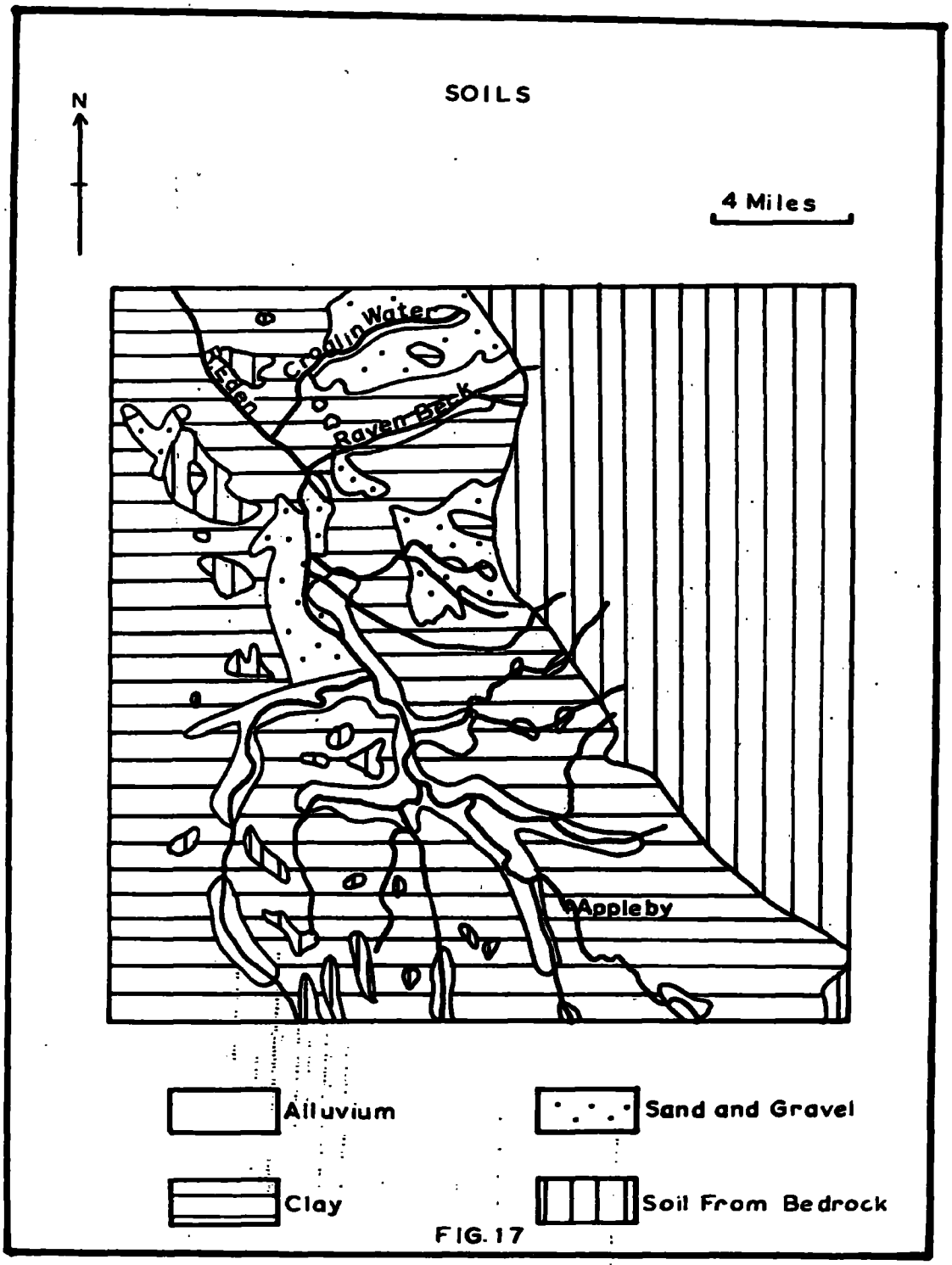

SOILS
N
4 Miles
Croglin Water
Eden
Raven Beck
Appleby
Alluvium
Sand and Gravel
Clay
Soil From Bedrock

FIG. 17

Generally the alluvial soils are deep and rich in humus. Undoubtedly they are the best soils in the region. Flooding was once a common occurrence but the Eden was deepened in its lower reaches at Carlisle some ten years ago and now widespread floods are very rare. Consequently the value of the soils has improved.

Boulder Clay Soils

The prevalent drift cover in the lowland areas does not weather to provide good subsoil drainage.[1] Physically the soils of the drift covered areas vary rapidly according to differences in the depth of the drift, its associated texture and conditions of subsoil drainage. Boulder clay varies itself and is still further diversified by fluvio-glacial deposits which vary from a silty to gravelly texture.

The clay soil is most characteristic of the region and there are two distinct types, Boulder Clay and Laminated Clay.

Boulder clay is very heavy to work and contains many stones. Drainage conditions vary greatly according to the parent materials and the varied topography. Consequently small swampy hollows are commonly found amongst dry almost sandy drumlins. In general the boulder clay can be best described as stony loam. Derived mainly from sandstones, the clay is usually red in colour. It is characteristic of the drumlin

1. Smailes A. E. "North England" p.56. 1961.

country in the Middle Valley and it occurs as broad sheets up to 750 feet. Small patches are found up to 1000 feet. In the main the boulder clay supports good grassland.

In contrast to the boulder clay, laminated clay is relatively stone free. These soils are frequently interbedded with loams and sands and are thus generally good arable soils.

Glacial Sand and Gravel Soils

This group too is a very varied one ranging in texture from coarse to fine sand, containing varied amounts of gravel and sometimes passing laterally into clays and loams. In general the soils are loamy as a result of interbedded bands of clay and because the sands often overlie boulder clay. In the eastern foothills there are some large continuous tracts of these soils and another extensive area is at the base of the sandstone upland, north of the Eamont confluence. Wherever climate and slopes permit these easily worked soils constitute useful arable land.

Soils from Bedrock

The most extensive tracts occur above 1000 feet. In the Pennine Upland the limestone outcrops are narrow and the beds are relatively thin, in contrast to the Western Uplands. In the latter area although limited in area, the dry stony loams are more productive than the soils in the Pennine upland.

In the Pennine area the soils are more acidic, need heavy liming to maintain their productivity and require careful drainage.

There is one other superficial material characteristic of the upland areas, namely peat. Peat is not a soil in the normal sense but it is very widespread and supports plant life and thus it merits attention.

Extensive areas of peat are found on the gently sloping, rain drenched uplands above 750 feet. Much of the peat can be regarded as the legacy of the Atlantic period beginning about 5500 B.C. In that period large areas were waterlogged and peat accumulated rapidly. The peat may be between fifteen and twenty feet thick but now shows clear signs of wasting.[1] The upper surface of the peat is now usually eroded and deep channels are developing in the mass as a whole. Large blocks of peat are now seen standing in isolation as a result of severe dissection. Once the mat of roots is broken the peat is rapidly removed along the channel sides.

In some areas the peat has been drained to improve grazing and there are small cultivated areas. Hill peat is rich in humus and nitrogen but it is deficient in phosphates and potash. Consequently efficient cultivation is expensive and instead the most common use is extensive sheep grazing. Because the

1. Smailes A.E. "North England" p.59. 1961.

peats occur at high altitudes, low temperatures heavy rain and high winds are normal. This suggests that the location of the peats rather than their composition is the chief problem. If the peats were at lower altitudes undoubtedly they could be more intensively used.

PART II

ECONOMIC AND HUMAN GEOGRAPHY

ECONOMIC AND HUMAN GEOGRAPHY

INTRODUCTION

This section contains a study of the main aspects of the economic geography of the region followed by more detailed discussion of settlement, communications and population. The information on which these chapters are based was obtained in part from published sources, particularly the 1961 Census and in part from detailed field investigation.

The basic structure of the area's economy is best assessed by an examination of the employment figures. As a region, the upper and middle Eden Valley is controlled by the employment exchanges at Penrith and Kirkby Stephen. In both cases the sphere of influence extends beyond the geographical region under consideration. Thus the most readily available source of information is the 1961 Census report.

Information on occupations supplied by the report is based on questions answered by 10% of the households. One disadvantage is that inherent in any method of sampling. A difference either way of twice the "standard error" may be expected about once in twenty times. For the bulk of the population or household items the "standard error" may be taken as roughly equal to the square root of that item.[1]

1. Special Tabulations. Scale "D" in Printed Form. Explanatory Notes General Register Office 1961.

Nevertheless the census does provide information for each parish and thus it provides better statistics for the geographical region than the employment exchanges.

In this sample there were 739 people who were economically active at the time of the census. (Appendix Table 1). These occupations were classified according to the Standard Industrial Classification (Appendix Table 2) a summary of which appears below in Table C.

TABLE C

Economically Active in Upper and Middle Eden Valley 1961.

Standard Industrial Classification Group	Total	%
SERVICE	342	43.8
AGRICULTURE	282	38.1
PRODUCTION	81	10.9
MINING	32	4.3
DEFENCE	11	1.5
OUT-of-WORK	9	1.2
Total:	739	

These figures form the basis of the following chapters on economic geography. The six groups will be examined in the light of further information gained during field work.

CHAPTER 4

AGRICULTURE

Agriculture is the most important single activity and employs 38% of the population. There are very important differences in farming within the region because the higher land has a harsh climate, is less accessible and the soils less productive. On the lowland farms, milk, hay and cereals are the main products whereas on the hill farms sheep are the main source of income.

In assessing these variations within the region the effect of the physical environment as a whole, and in particular the direct and indirect influence of climate, cannot be overestimated. In many instances the significance of climate is highly localised. For example the hummocky valley floor contains many frost pockets. In introducing this chapter it will be of value to examine the effect of climatic variation in some detail.

Manley[1] in his "Climate and the British Scene" has shown that in the northern part of Britain the rate of fall of mean temperature with height is about 1°F. for every 270 feet. Thus above 2200 feet the mean summer temperatures are little over 50°F. At Moor House (7532) at 1840 feet lambing takes place

1. Manley G. "Climate and the British Scene" p.179, 1955.

early in May whereas at Spitals Farm (6226) at 420 feet, February is the main lambing season. Intensity of plant growth is related to the amount by which the mean daily temperature exceeds 42°F. Thus a late cold spring delays plant growth and this usually means decreased yields.

Annual variations in the weather conditions of a particular season are more significant on the higher farms. In a cool cloudy summer, typical of the region, the aggregate deficit in mean temperature is greater on the high ground. (Table D).

TABLE D[1]

Cool and Cloudy Summer Months (°F)

	July 1936		August 1943		August 1946	
	Normal	Departure	Normal	Departure	Normal	Departure
Penrith) 559 feet)	57.5	- 0.6	57.3	+ 0.4	55.3	- 1.6
Moor House) 1840 feet)	51.5	- 1.3	51.7	- 0.6	49.6	- 2.7

Under certain weather conditions the higher farms benefit as for instance when the summer is fine and dry. Warm anti-cyclonic weather with an absence of strong winds results in mean temperatures at higher altitudes which are closer to those in the lowlands. Also the minimum temperatures under such conditions are normally below the average in the lower areas towards which the cold air tends to flow. (Table E.)

1. Manley op.cit. p.183

TABLE E[1]

Warm Anticyclonic Conditions, June 1940 (°F)

		Normal	Departure	Mean Max.	Mean Min.
Penrith	559 feet	59.4	+ 4.7	71.8	46.9
Moor House	1840 feet	56.1	+ 6.7	67.0	45.2

Even at other seasons under similar conditions this same feature can be discerned, (Table F), and the uplands derive greater benefit.

TABLE F[2]

Anticyclonic Conditions

		Normal	Departure	Mean Max.	Mean Min.
March 1933 (°F)					
Penrith	559 feet	43.4	+ 3.7	51.5	35.3
Moor House	1840 feet	39.2	+ 5.1	45.7	32.7
December 1935 (°F)					
Penrith	559 feet	33.4	- 4.9	38.2	28.6
Moor House	1840 feet	30.9	- 3.0	33.9	27.9

When the weather is prevailingly cyclonic and damp polar air is involved the reverse effect is noticeable. In the surface layers of air the lapse rate is high and in the higher areas cloudiness, rainfall and wind velocity all increase. Altitude is particularly significant in spring because then polar air has received little heat from the sea. (Table G).

1. Manley op.cit. p.184
2. Manley op.cit. p.184

In this table a normal May is compared with the dull wet May of 1932.

TABLE G[1]

Normal May compared with a dull wet May (1932)(^{o}F)

	Mean	Mean Max.	Mean Min.
Penrith 559 feet			
Normal May	50.1	58.8	41.4
May 1932	48.4	55.3	41.5
Moor House 1840 feet			
Normal May	44.7	51.8	37.6
May 1932	42.3	46.8	37.8

At the higher levels both wind speed and frequency increase and so also does precipitation in all forms. It is the high annual rainfall that limits the reclamation of the moorland. In a few areas plants will tolerate the highly acidic soils, the lower temperatures and increased wind velocity but with a total rainfall of over 50 inches the gentler slopes are completely water-logged. Economic conditions may make cultivation possible at high levels, for instance during the last war when oats were grown at 1400 feet in the Pennines. Normally however increased altitude means quickly falling yields, and possible crop failure.

Having considered some of the important environmental factors the general characteristics of farming and land use

1. Manley op.cit. p.185

will be examined. This will be followed by a description of the agricultural regions illustrated by reference to eight specimen farms.

General Characteristics

This section is based on figures supplied by the Ministry of Agriculture and Fisheries which are given in full in Appendix Tables 3 and 4. A summary table appears below (Table H). In the region Improved land comprises 49% of the total, most of which is below 1000 feet, and Rough Grazing the remainder.

TABLE H

(a) Land Use in the Upper and Middle Eden Valley 1960.

Area	256,920 acres (401 square miles)
Improved Land	125,572 acres
Rough Grazing	131,348 acres

(b) Utilisation of Improved Land.

Permanent Grassland (for grazing)	41%
Permanent Grassland (for mowing)	16%
Temporary Grassland (for grazing)	18%
Temporary Grassland (for mowing)	14%
Oats	7%
Turnips and Swedes	2%
Barley	0.8%
Potatoes	0.8%
Mixed Corn (for threshing)	0.5%
Wheat	0.3%
Mangolds	0.2%
Cabbage, Early Potatoes, Fallow Orchards(often grazed)Rye, Sugar,Beet	0.1%

Permanent Grassland

The overwhelming importance of permanent grassland for grazing and for hay, which together occupy 57% of the improved land, indicate the leading position of pastoral farming in the agricultural economy of the area. (Fig.18). On heavy soils the pastures can be grazed from late May until late November. Hay from these pastures is inferior in quality and yield when compared with that from temporary grassland, but it is especially valuable to the higher lying farms.

On the better lowland soils Agrostis pastures occupy more than half of the fields and the remainder are mainly Agrostis with Rye grass.[1] (Fig.19). These grasslands, occurring as they do in the main arable area, are grazed by cattle during the summer and by flocks of sheep during the winter. Usually after a crop of hay has been taken, the grass is allowed to grow into the early Autumn before grazing and this method favours the development of cocksfoot.

On the higher country of the Pennine foothills and the Western Uplands, usually between 600 feet and 800 feet, a slightly different type is found. Agrostis pasture predominates but the poorer fields have often been invaded by rushes. Many of these pastures are in poor condition and need ploughing and reseeding. Because of climatic and soil conditions there is little prospect of these areas being used for anything other

1. "The Land of Britain" Parts 49 and 50. p.289, 1943.

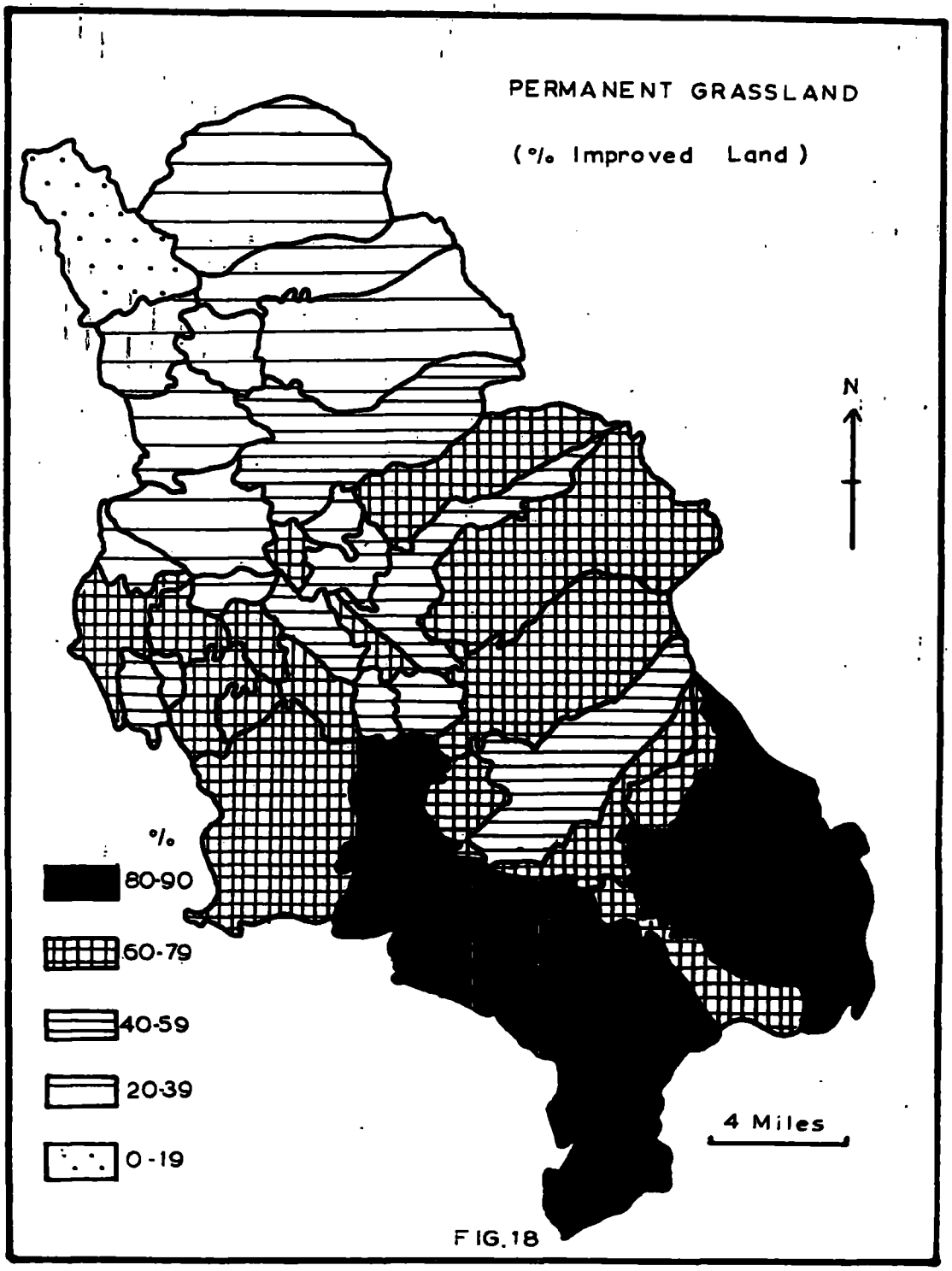

PERMANENT GRASSLAND
(% Improved Land)
N
%
80-90
60-79
40-59
20-39
0-19
4 Miles

FIG. 18

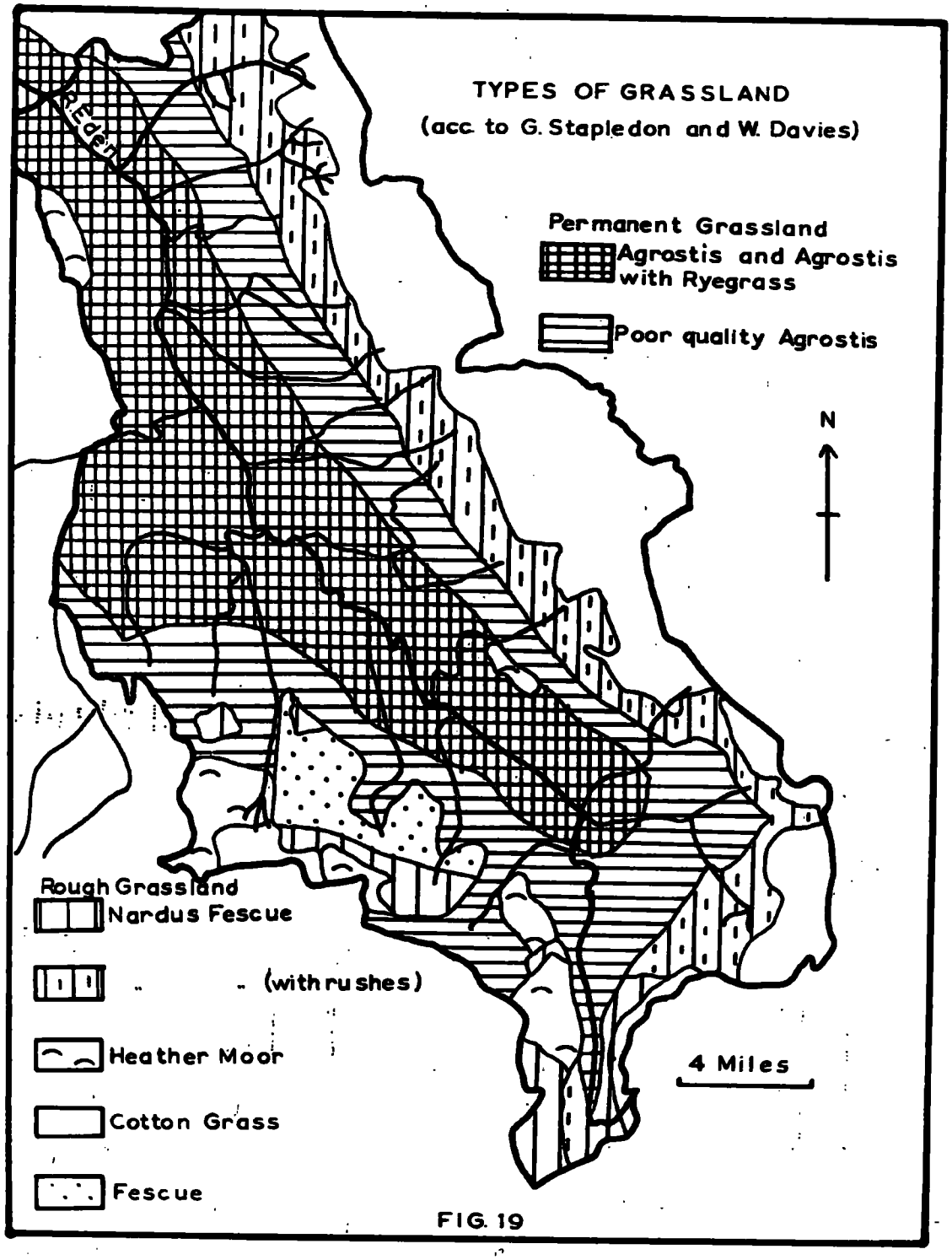

TYPES OF GRASSLAND
(acc. to G. Stapledon and W. Davies)
Eden
Permanent Grassland
Agrostis and Agrostis with Ryegrass
Poor quality Agrostis
N
Rough Grassland
Nardus Fescue
(with rushes)
Heather Moor
Cotton Grass
Fescue
4 Miles

FIG. 19

than pasture.

Arable Land

Arable land constitutes 43% of the Improved land. Once more grassland is the main category for 14% of this improved land produces hay and another 13% is grazed. (Fig.20). In the region a seven-year rotation is commonly used, namely oats - roots - oats then four to five years grass.

The Temporary Grassland is of a very high quality. In the Autumn first year seeds get an organic dressing and sometimes a phosphate dressing. After the hay has been cut a second crop is taken off in September. Alternatively the early grass is ensilaged and the later growth can be strip-grazed. On Temporary Grassland a hay crop is usually taken off in each of the first two years.

The only other important crop is Oats occupying 7% of the Improved land. It is a cereal crop especially well-suited to the damp cool summers. Quality and yield vary from year to year but given a dry March for sowing, yields are up to the National Average (23 cwts. per acre). "Victory" and "Yielder" strains seem to be the most popular because, although not the heaviest of croppers, they tolerate the variable summers very well. Most of the oat crop is used on the farm but some is sold to the hill farmers. Oat straw is a useful bedding

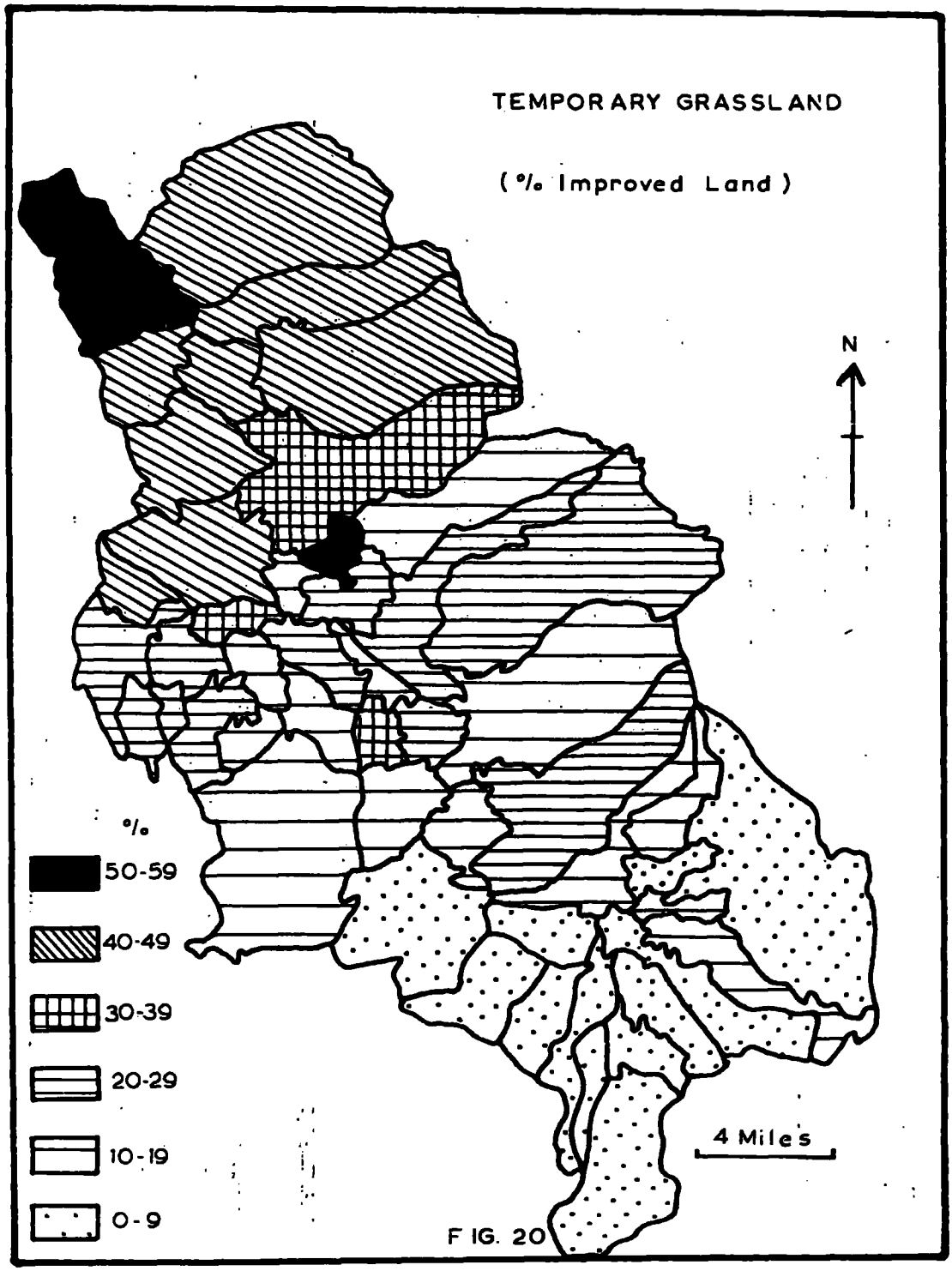

TEMPORARY GRASSLAND
(% Improved Land)
N
%
50-59
40-49
30-39
20-29
10-19
0-9
4 Miles

FIG. 20

material and it is fed to beef cattle.

Turnips, Swedes and Mangolds occupy 2% of the Improved land. The average yield is 11% higher than the National Average (13.1 cwts. per acre). The acreage under roots has decreased during the last 60 years because manufactured feeding stuffs have become more important. Nevertheless even today sheep depend very heavily on turnips, mangolds and swedes during the Winter. A second reason for the continued importance of roots is that they are grown to keep the soil in good heart. Sheep droppings, decaying roots and leaves, when ploughed in the following Spring, enrich the soil and improve its structure.

Of the minor crops in the region barley and main crop potatoes are the most important. The main producing area is the northern lowlands and in the Eamont valley. The small wheat crop, confined to the northern lowlands, and the one acre of sugar beet are a reflection of the cool cloudy summers characteristic of the area.

Rough Grassland

Locally, as north of Brough (Fig.19), improved pastures are found up to 1600 feet but generally the rough pastures have a lower limit of between 800 feet and 1000 feet. Above this height the rough grassland country may be divided into four broad groups. (Fig.19).

Nardus Fescue covers large areas above 1000 feet on Ravenstonedale Rell and in the Upper Eden. White mat grass is the dominant strain with sheep's fescue. In badly drained areas Cotton Grass usually becomes dominant, and on peat surfaces heather is well established. East of the Eden on the steep slopes between 800 feet and 1400 feet there is a large area of Nardus Fescue having an excess of rushes. A smaller area is located on Wild Boar Fell and Swarth Fell west of the Eden in the Upper Valley.

Cotton Grass moors are characteristic of the high ill-drained plateau surfaces of the Pennines. Cotton Grass develops in these areas with a rainfall of over 50 inches and they constitute some of the worst lands in Britain.

On the limestone uplands south and south west of Appleby, fine-leaved Fescue pasture is the characteristic type. Where they have been enclosed they are mixed with Agrostis and crested dog's tail but when unenclosed the Fescue is often invaded by bracken and gorse. Bracken is spreading rapidly in areas below 1200 feet, formerly grazed by cattle. Above 1200 feet undergrazing usually leads to the development of heather moor.

Heather moors are characteristic of the drier sandstone uplands north of the Eamont and on Brackenber Moor (7119) south

east of Appleby. A third area in which extensive heather moors have developed is the higher summits on the limestone uplands of Crosby Ravensworth Fell.

The variations in the character of the Rough Grasslands reflects not only varying environmental conditions but also the different uses made of the uplands at different times and with differing intensity of grazing. Consequently the patterns of vegetation in the rough grasslands are now very complex and unstable.

Livestock

Sheep and cattle are the basic elements in the farming economy. (Table J), but whereas sheep are fairly evenly distributed (Fig.21) cattle are limited to the land below 750 feet (Fig.22).

TABLE J

Livestock in the Region, 1960

Sheep	233,273
Cattle	68,717
Pigs	3,189
Poultry	178,504

Most of the lowland sheep are grey-faced Border-Leicesters bred on farms having a large acreage of permanent pasture. In late Autumn the flocks eat off the roots. Lambing starts

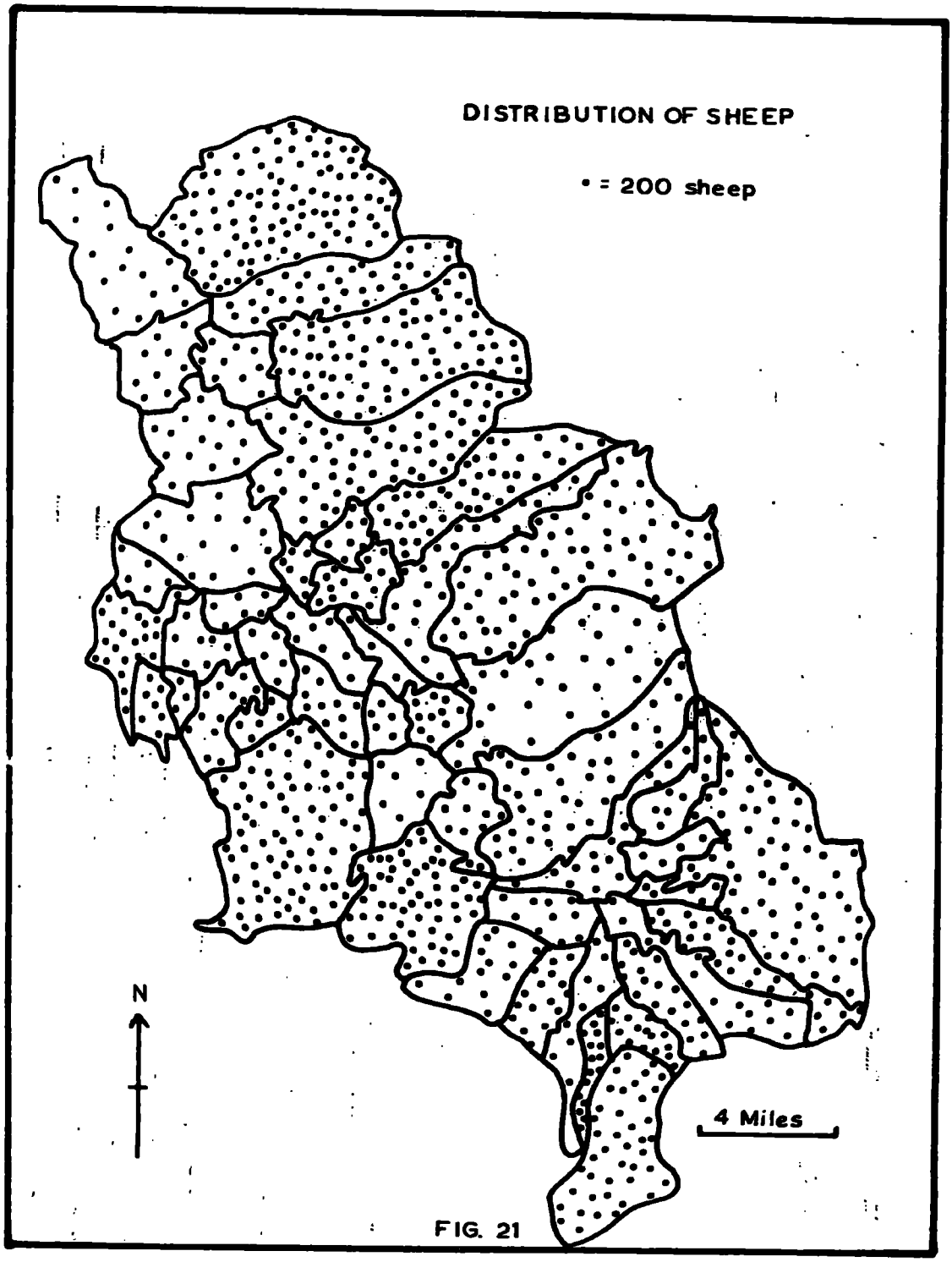


FIG. 21

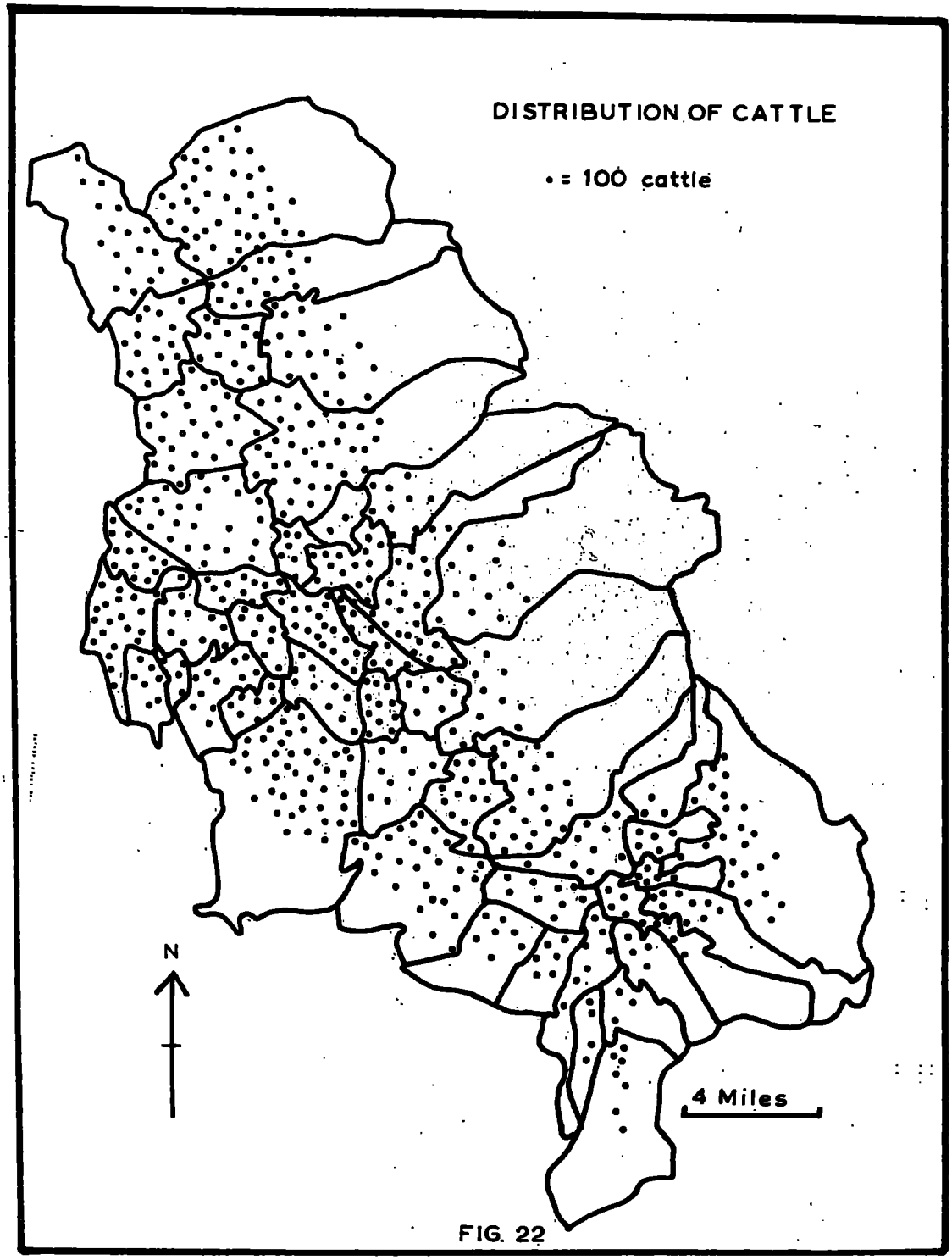


FIG. 22

in January and the fat lambs are sold at the several large summer sales.

Most of the sheep in the area are fell sheep and their home is the land over 750 feet. In the upper valley and on the Pennines Swaledales are the most popular breed but Rough Fells predominate on the Western Uplands. Swaledale wool is finer but the average fleece of 3½ lbs. is one pound lighter than the Rough Fell fleece. For most of the year these fell sheep graze the rough grasslands. In winter hay is taken to them and at lambing time they are moved onto the permanent pasture near the farm. Many of these sheep spend their first winter on the high quality pastures of the Solway marshes. In contrast to the lowland sheep lambing is rarely before May.

Cattle now number almost 69,000 (Fig.22) of which 35% are milkers or cows in calf and 63% are young stock and beef cattle. Practically every farm produces milk and some beef and there are many breeds. A lowland farm with a large area of temporary grassland normally runs a large herd of high quality dairy cattle such as Ayrshires, Friesians or Shorthorns. The output and quality of the three breeds differ (Table K).

TABLE K

Dairy Cattle : Comparison of Breeds (Northern Counties 1962)[1]

Breed	Annual Average Milk Output (lbs)		Butter Fat Content
	Cows	Heifers	
Friesian	10,530	8,972	3.66%
Ayrshire	9,352	8,279	3.89%
Dairy Shorthorn	8,424	7,017	3.58%

In the Eden Valley the Dairy Shorthorn is still popular because it enables a farmer to modify his milk or beef production according to price changes.

In contrast to the lowland farm, on higher farms where permanent grassland is more important the dairy herds are smaller and usually beef cattle are as numerous. During the last three years Galloways, Aberdeen-Angus and Herefords have become a much commoner sight on the higher farms in the region. Some hill farmers buy in young beef cattle in the early summer, graze them on the permanent pastures and sometimes on the rough grasslands then sell them in the Autumn. The hill farmer rarely has enough fodder to feed the cattle through the winter.

Other livestock are normally supplementary to sheep and cattle. Nowadays poultry farming is only profitable if large numbers are intensively farmed by automatic battery feeding,

1. "Cumberland and Westmorland Herald" 17th March, 1962.

or more humanely in deep litter houses. Similarly pig production must be highly specialised. Pigs and poultry have both declined in numbers during the last ten years. Now they are most numerous in the more productive northern lowlands.

Labour

One final characteristic of farming in the region is the small size of the labour force. In these 400 square miles there are only 1637 workers.

It is generally agreed that farm workers are difficult to obtain and good ones are now a rarity. Remoteness and long working hours undoubtedly deter many young people. Because labour is difficult to obtain farmers frequently plan their programme according to labour available. Frequently this means inefficient farming. Alternatively, the farmer can reorganise completely. One notable example is the dairy farmer who has now become a beef and cereal producer. One main reason for this reorganisation was the lack of good labour.

The density of the labour force within the region varies, (Fig.23) according to the productivity of the land. For instance in the intensively farmed lowland parish of Bolton there is one labourer to every 68 acres, whereas in Dufton on the Eastern fells the ratio is 1:421.

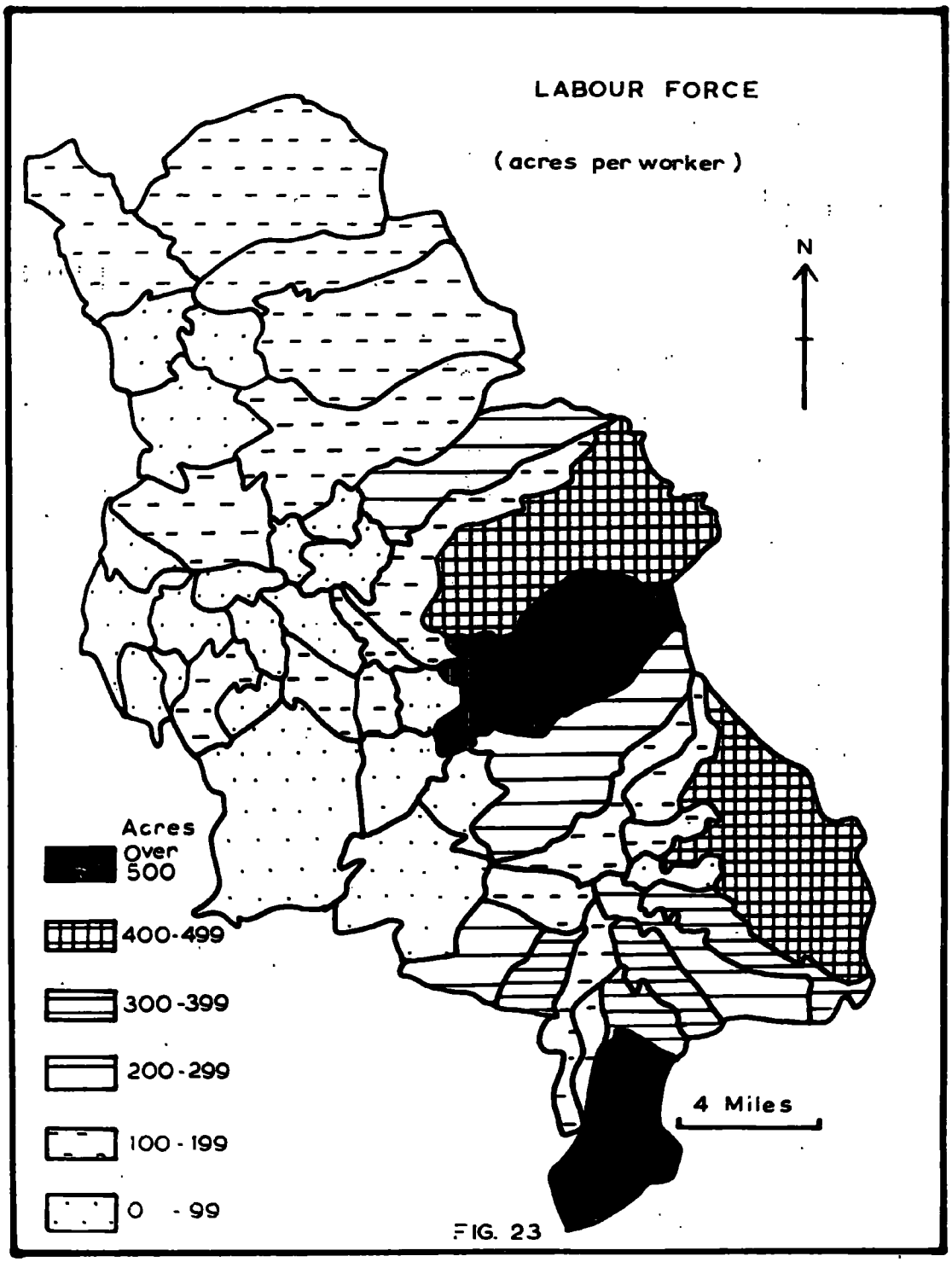

LABOUR FORCE
(acres per worker)
N
Acres Over 500
400-499
300-399
200-299
100-199
0 - 99
4 Miles

FIG. 23

Agricultural Regions

The great topographic variations in the Eden Valley and the associated climatic differences over a small area, when combined with the irregular spread of glacial deposits have led to significant variations in the pattern of land use. Nevertheless although individual farms vary in detail there is a definite pattern, closely related to the physical environment.

Regional variations tend on the whole to follow the isohyets which in turn follow the contours. Although in the Shap area of the Western Uplands some fields above the 50 inch isohyet have been ploughed, normally above 750 feet rainfall totals approach 50 inches and usually such land is devoted to sheep farming.

In order to illustrate the regional variations in farming, some aspects of land use in four parishes are tabled below. (Table L).

TABLE L

Regional Variations in Agriculture

Region	Upper Valley	Western Uplands	Eastern Uplands	Lowland
Parish	Mallerstang	Crosby Ravens-worth	Dufton	Bolton
Improved Land (% Parish)	20	56	14	90
Permanent Grassland (% Improved)	99	73	64	62
Arable (% Improved)	0.4	25	36	38
Temporary Grassland (% Improved)	0	17	22	25
Oats (% Improved)	0	4	9	6
Turnips, Swedes, Mangolds (% Improved)	0	1	4	2
Rough Grazing (% Parish)	80	44	86	10

Bolton is situated in the lowlands in the Middle Valley region (Fig.24). The area is below 500 feet and has less than 35 inches of rain. The outstanding feature is the high proportion of Improved land (90%). Permanent grassland is the main element but over ⅓ is arable and ¼ is temporary grassland.

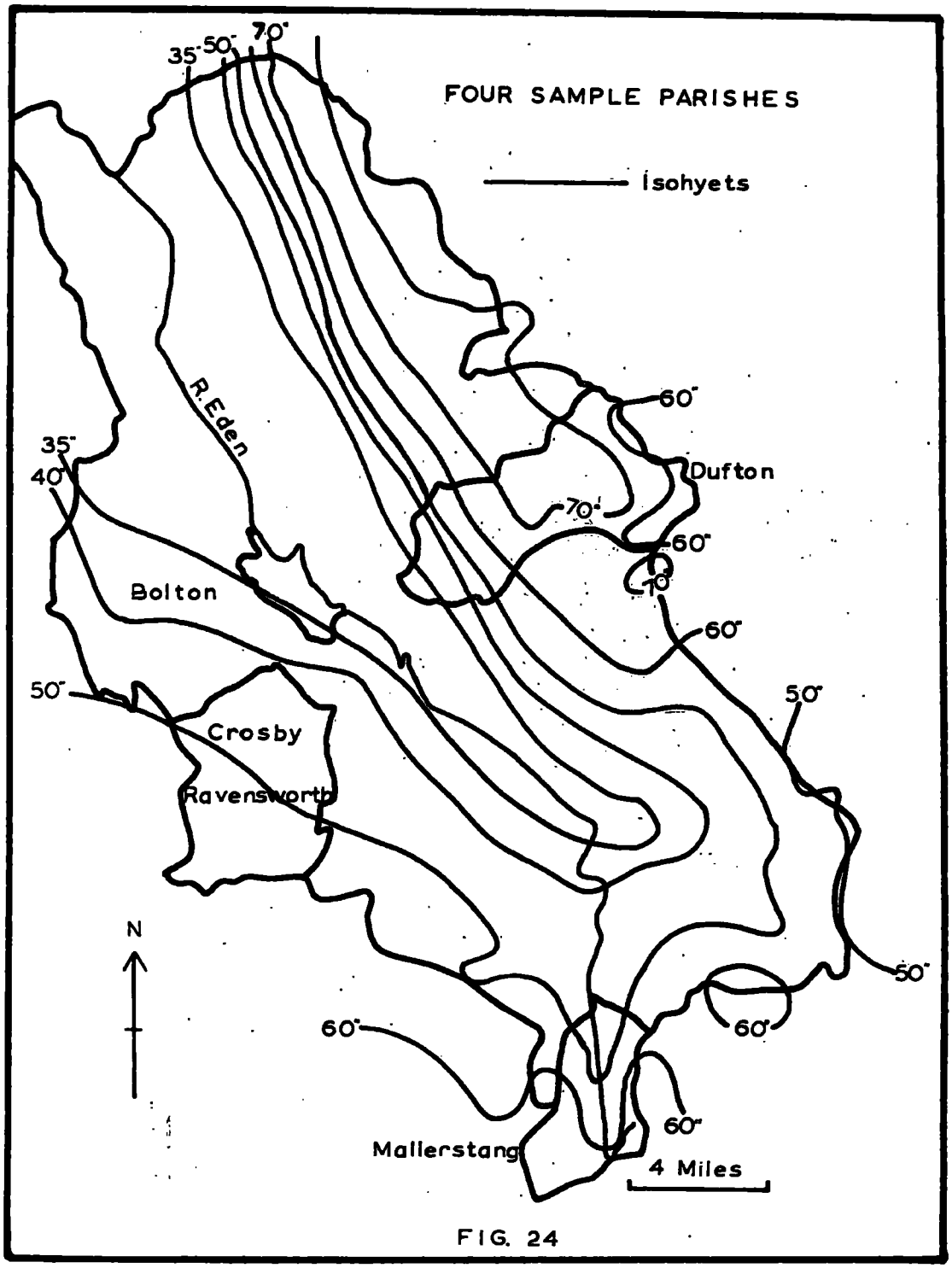

FOUR SAMPLE PARISHES
Isohyets
35"
50"
70"
R.Eden
60"
Dufton
35"
40"
70"
60"
70"
Bolton
60"
50"
50"
Crosby
Ravensworth
N
50"
60"
60"
60"
Mallerstang
4 Miles

FIG. 24

Crosby Ravensworth is between 500 feet and 1000 feet and has an annual total of between 45 inches and 50 inches. Situated in the Western Uplands, it has a smaller proportion of improved land and the area of rough grazing is much larger. In contrast to the lowlands the proportion of permanent grassland is higher and arable land less.

Dufton, which lies across the Pennine scarp and includes a large area of plateau to the east, has between 40 inches and 60 inches. Land use here is typical of the Eastern Uplands. Only 14% is improved and rough grazing is the largest category. The improved land is situated on the gentler slopes at the base of the Pennine escarpment. Clearly the Eastern Uplands are agriculturally inferior to the Western Uplands. In the latter area slopes in general are gentler and most of the region is below 1000 feet whereas the Eastern Uplands are more rugged and much higher.

In Mallerstang, the largest parish in the Upper Valley, most of the land is over 750 feet and rainfall totals range from 45 inches to over 60 inches. Here the dominant feature is the very large area of Rough Grazing (80%) and of the improved land, 99% is permanent pasture. In the whole parish (8371 acres) the only arable crop is ½ acre of roots.

In the region as a whole, most of the arable land is confined to the Middle Valley Lowlands. The proportion of arable land decreases from north to south and more rapidly to east and west away from the River Eden. Permanent grassland is important throughout the lowlands and above 750 feet it constitutes almost all the improved land. Above 1000 feet the land is rarely fit for anything but Rough Grazing.

There are three distinctive types of farming in the Eden Valley (Fig.25). The three regions will be considered in general terms first and then later illustrated by an examination of typical farms within each region. A summary of the salient characteristics of these farms appears in Appendix Table 5.

The Valley Region

This region is situated below the 500 foot contour. One of the most important features of the physical environment is the thick mantle of glacial deposits. Consequently the soils are extremely varied ranging from quickly drying light red sands to heavy clays. This latter group, particularly near the Eden, are often too wet for arable farming. Apart from patches of rough grassland on some of the lighter soiled drumlins, the land is generally of high quality.

The main feature of the region is the high proportion of arable land, between 30% and 60% of the total of improved land.

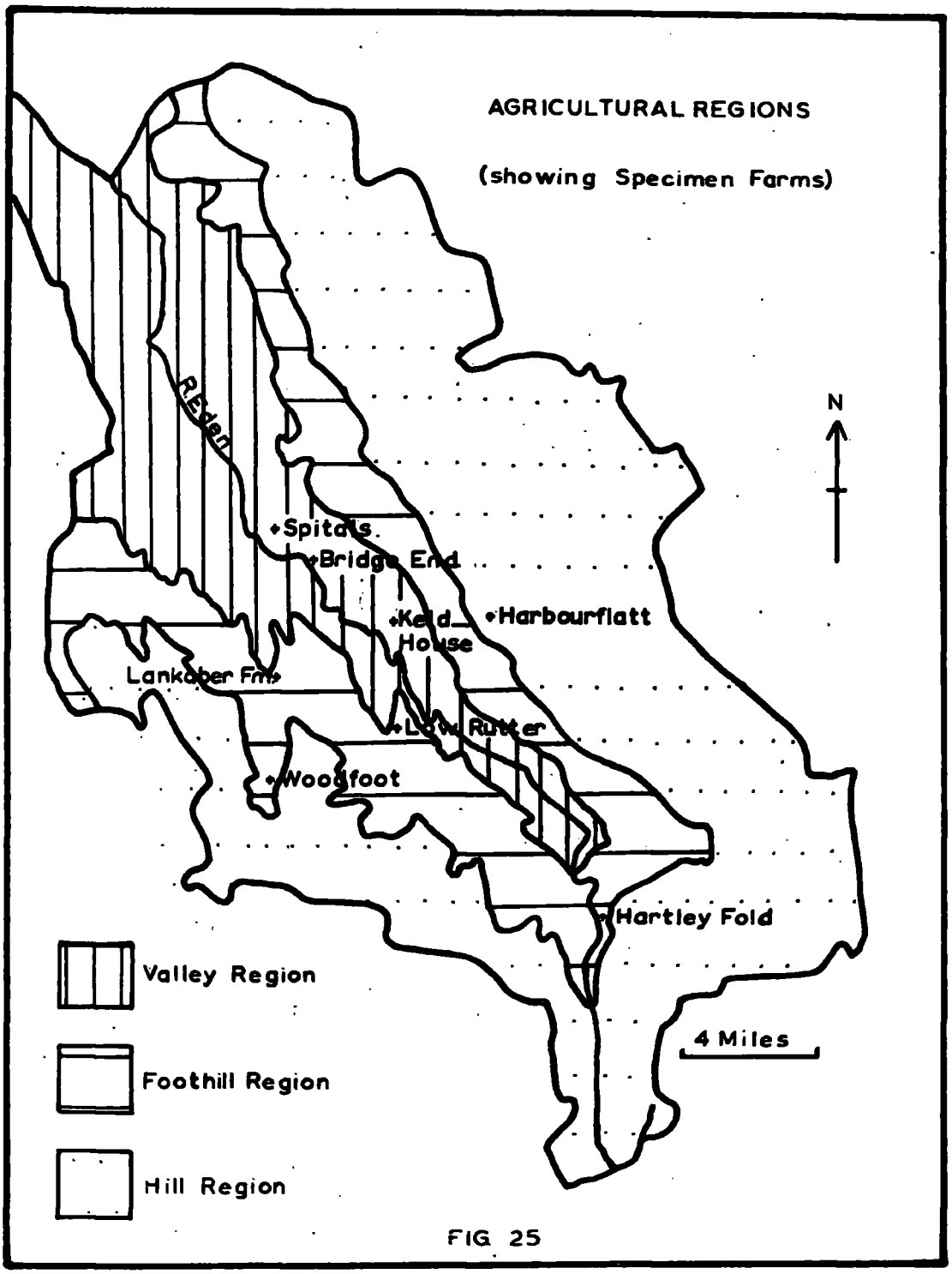

AGRICULTURAL REGIONS
(showing Specimen Farms)
Eden
N
Spitals
Bridge End
Keld House
Harbourflatt
Lankaber Fm
Low Rutter
Woodfoot
Hartley Fold
4 Miles
Valley Region
Foothill Region
Hill Region

FIG 25

Permanent pastures are of secondary importance (15% to 45%) and rough grazing normally under 10%.

Most farms are between 100 and 200 acres. Usually up to half of the arable land produces temporary grass, oats are grown on up to one quarter of the area and wheat, barley and roots occupy the remainder.

Dairy farming is the chief source of income. Ayrshires and Friesians are now the main breeds in the area. From thirty to fifty milking cows are farmed, the actual number depending on the size of the hay crop, and grazing land available.

Beef production has become more important during the last three years and most farmers breed and rear up to twenty steers. These animals are sold either as store cattle at twelve months or as fat stock when two or three years old.

A flock of up to one hundred sheep is kept on most farms. These are sturdy grey-faced Border-Leicester sheep and their early lambs bring high prices. During the last few years sheep flocks in general have increased in size.

Specimen Farms

SPITALS (6226)

This farm is situated at 421 feet on the A66 and the land is between 350 feet and 425 feet. (Fig.27). Spitals is a good farm (valued at up to £200 per acre). East of the railway,

LAND UTILISATION

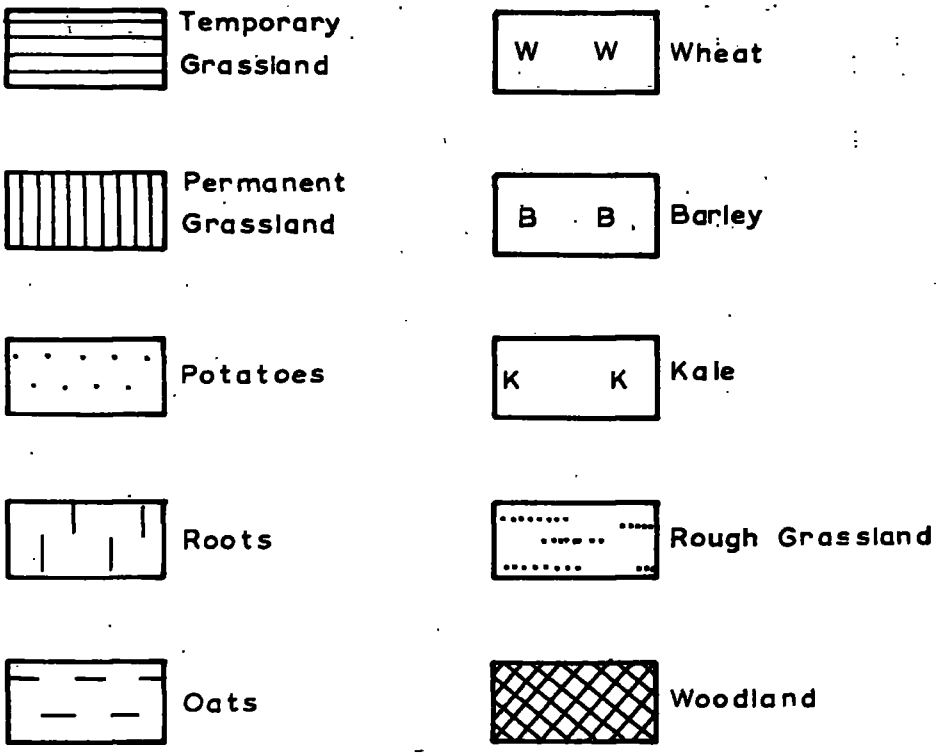


FIG. 26

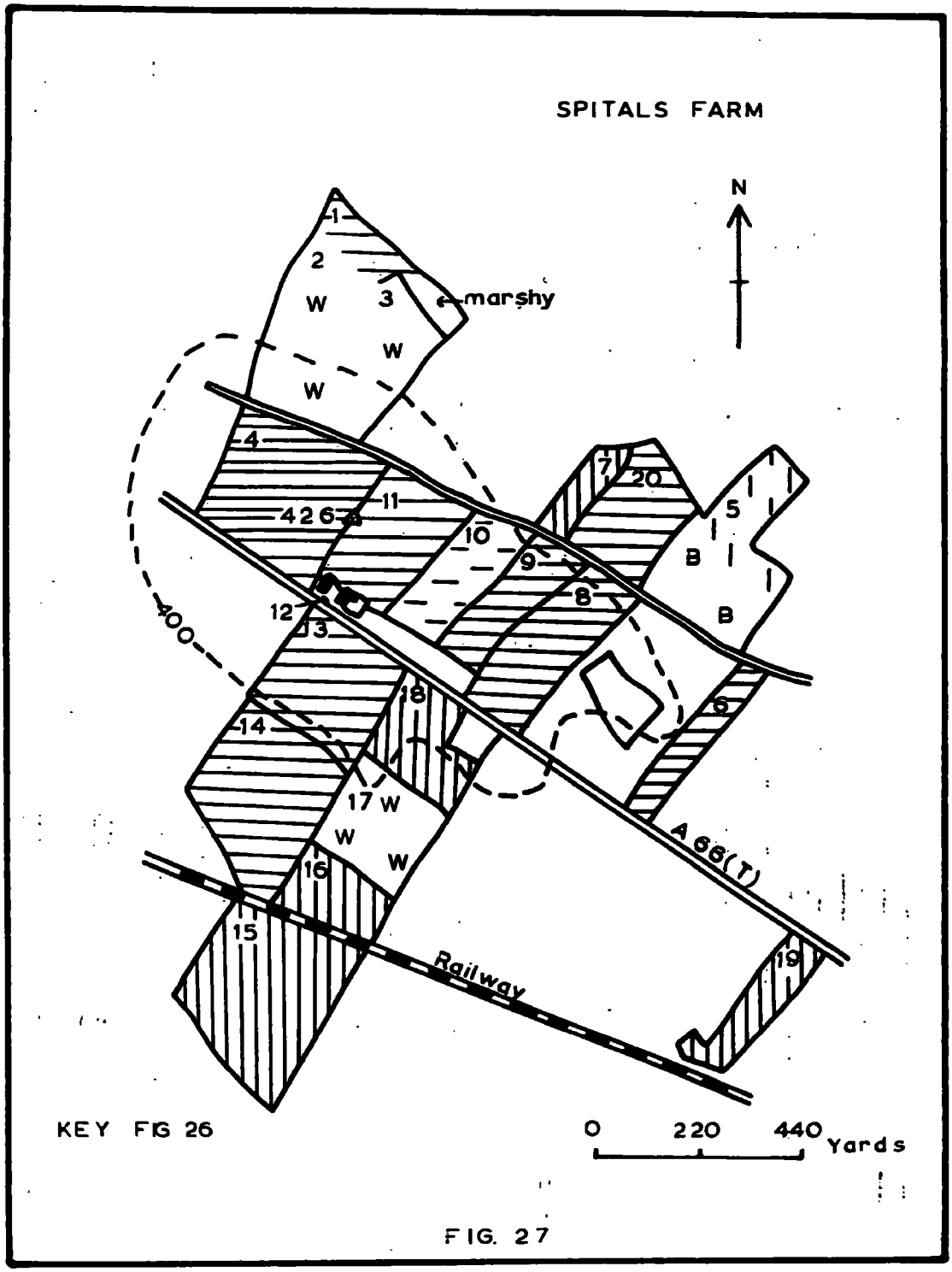

SPITALS FARM
N
marshy
W
W
W
W
1
2
3
4
426
11
10
9
8
7
20
5
B
B
6
12
13
14
18
17 W
W
W
16
15
400
A 66(T)
Railway
19
KEY FIG 26
0
220
440
Yards

FIG. 27

soils are medium to light but they become heavier west of the line.

TABLE M

Spitals Farm: Land Use Summary

ARABLE	80%
Temporary Grassland	51%
Wheat	18%
Fodder and roots	4%
Barley	4%
Oats	4%
PERMANENT GRASSLAND	19%

The outstanding feature of Spitals is that 80% of the farm is arable (Table M and Appendix (Table 6a) and of this Temporary grass is the main crop. Since the tenant has only been here for two years, the farm is still being organised. Ultimately the acreage of wheat will be smaller but potatoes will be much more important. A seven year rotation is in use, namely, hay - wheat - roots or barley - three to four years grass.

All the grassland receives three tons of ground limestone per acre, the lime being brought from the Blencowe works west of Penrith. In addition as is now the practice on most farms of this type, a complete Fertiliser (Nitrate, Potassium and

Phosphate) in the ratio of 1:1:1½) is applied. Spitals uses 18 tons every year, the grassland receiving 1½ to 3 cwts. per acre and wheat 2½ cwts. per acre.

The large acreage of grass reflects the importance of livestock (Table 6b). In a normal year the fields can be grazed by mid-April for the light to medium soils heat up rapidly. The cold east winds do retard growth and when this happens (as in 1961) the fields were not grazed until early May.

At any one time the milking herd usually numbers about thirty, the Friesians averaging 950 gallons a year and the younger Ayrshires 700 gallons. The dairy herd comes in at nights in October but during daytime the cattle graze until mid-December. Usually Spitals has an eight month grazing season - much longer than in the Valley region as a whole. On the light well drained soils the cattle do not churn up the ground very quickly.

One problem is the bisection of the farm by the A66. Taking a valuable dairy herd over this busy road in July and August is hazardous. Consequently the grazing west of the road is given to the young stock.

Dairy farming is an increasingly costly business. The Winter feed at Spitals indicates what is involved. Hay and

silage, cabbage and up to 50 lbs. of kale per day are staple items. In addition they get "Vitomeal Cake" at the rate of 3½ lbs. per gallon, for every gallon after the first. In 1963 a new byre was completed and the milking herd has been doubled in size.

Ultimately sheep will become more important and the plan is to run about fifty Suffolk-crossed ewes, producing an average of 75 lambs for the Spring Sales.

Naturally on this type of farm a good deal of labour is needed. In fact Spitals employs three men throughout the year and in addition casual labour during the harvests.

BRIDGE END(6325)

This farm is situated on the A66 on the southern limits of Kirkby Thore village. In contast to Spitals, only a small acreage is on the other side of the road. The house is at 350 feet and the land rises from 350 feet to 375 feet. (Fig.28). In general the soils are medium but are very gravelly beside the River Eden.

Bridge End is of 247 acres. Thus in contrast to Spitals, there is no necessity to rent land elsewhere, and Bridge End is a lower-lying farm. Its size and location make it a first class farm.

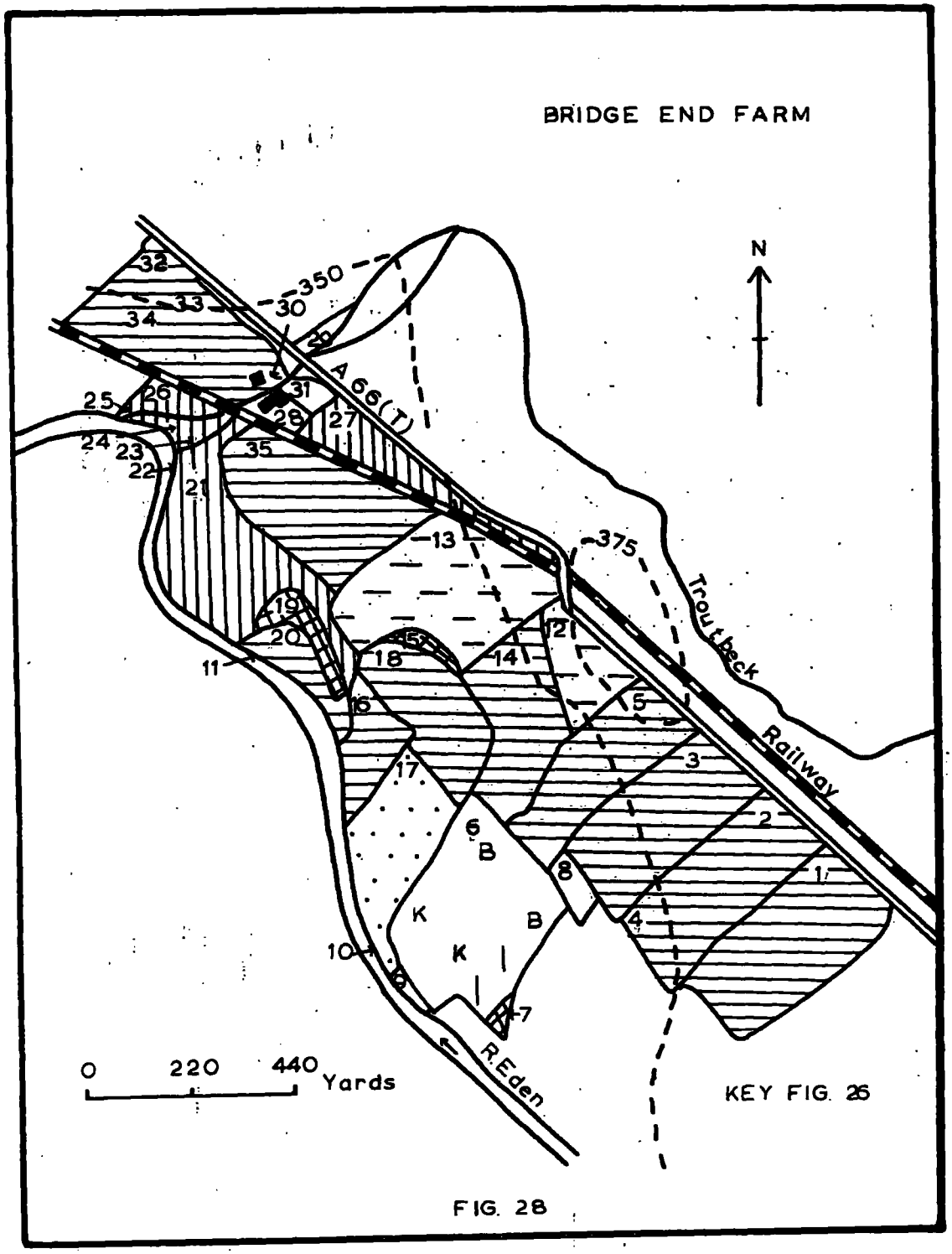

BRIDGE END FARM
N
A 66(T)
Troutbeck
Railway
R.Eden
0 220 440 Yards
KEY FIG. 26
K
B

FIG. 28

The farm is unusually interesting because until October 1961 it carried a large pedigree dairy herd. The herd was then sold and the character of the farm has changed completely. Bridge End as a dairy farm will be considered first and then the recent changes will be outlined.

TABLE N

Bridge End Farm: Land Use Summary (before Oct. 1961)

ARABLE		78%
	Temporary Grassland	47%
	Barley	11%
	Oats	9%
	Fodder and Roots	10%
PERMANENT GRASSLAND		14%
WOODLAND		2%

Before October 1961 Bridge End was primarily an arable farm (Table N and Table 7a), and temporary grassland was the main element. The seed used was Timothy-Fescue mixture and the grass was intensively used. Usually the first crop of grass was ensilaged, then the field was strip grazed and finally it was grazed normally. The normal rotation was hay - potatoes - wheat or barley (undersown) - 6 years grass.

Bridge End was farmed well. The two fields of permanent grassland adjacent to the River Eden are subject to flooding

and in order to keep them in good condition they were reseeded about every ten years. All pasture received 3 cwts of "Compound" per acre, turnips 3½ cwts. and potatoes 10 cwts. Whenever a field was reseeded two tons of ground limestone (per acre) were applied.

Particularly outstanding was the eleven year old pedigree Friesian herd. The "Raith" herd stands comparison with any other in the country (Table O).

TABLE O

Raith Herd Output

Year	Numbers	Annual Average
1955 - 56	51 Cows	1021 gallons per cow
	15 Heifers	956 " " heifer
1960 - 61	40 Cows	1155 " " cow
		(Butter Fat 3.68%)
	28 Heifers	1065 gallons per heifer

The dairy cattle usually went to graze in mid-April and they grazed outdoors in daytime until late November. Usually cows were sold after the fourth calf. Only the best calves were kept and thus the output of the herd has steadily increased (Table O). Intensive feeding was essential. Even in summer the cows had a low protein grass cube feed and during the winter they had 4 lbs. of feed for every gallon

after the first.

Beef cattle were an important element on the farm (Table 7b). All bull calves were kept until two years old. In the number of beef cattle Bridge End was outstanding as a lowland farm.

The small flock of sheep was more typical of the farms in this region. All the lambs and hoggs were sold at the Appleby June Sale. The four hundred hens in deep litter, made an important contribution.

Characteristic of the Valley region the labour force was relatively large, namely one woman and four men. One of the men was a specialist dairyman. Casual labour was obtained for the harvests.

In October 1961 the farm was reorganised and since then the emphasis has been on beef and sheep (Table 7c). The valuable "Raith" herd was sold, and there is now one dairy cow on the farm.

Arable acreage has been increased by 8%, at the expense of permanent grassland, and more potatoes and hay are being produced.

The beef cattle feed outside all the year and a self feed silage system has been installed. Sheep are much more important. The 250 ewes are the breeding flock and the hoggs

having been fattened on the turnips are sold.

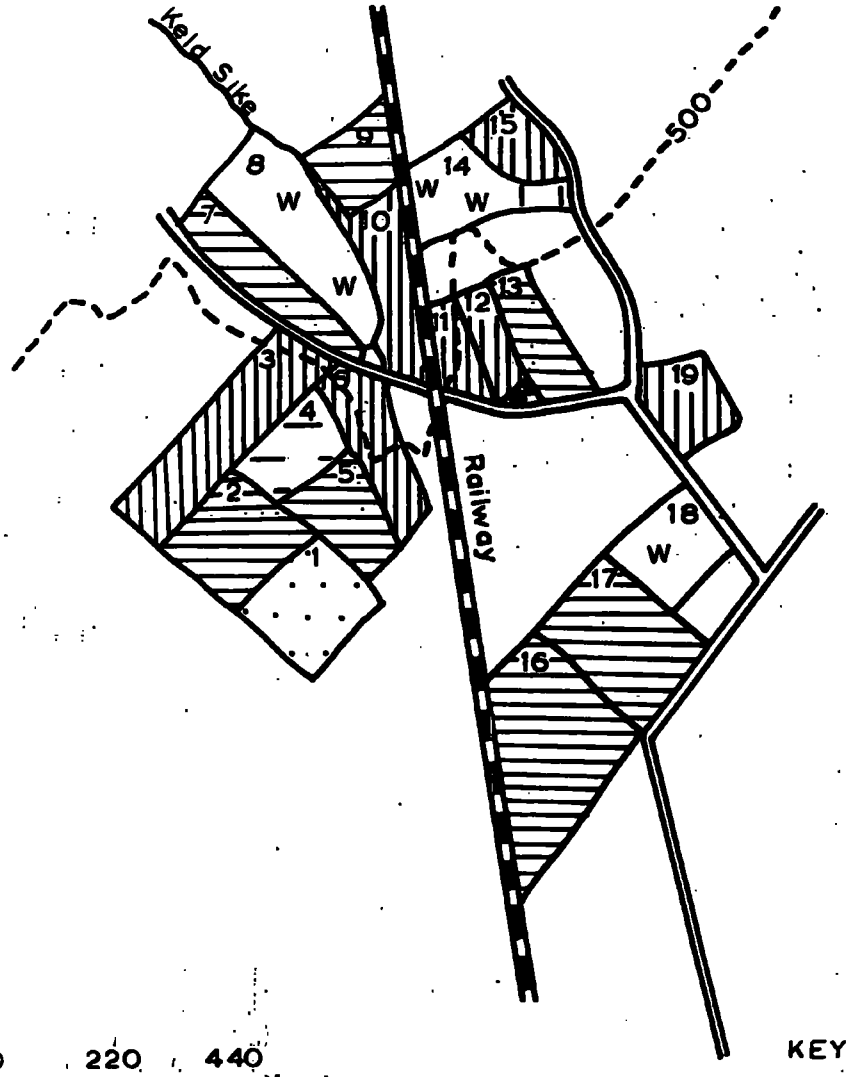
Poultry now play a very important part. They are housed in the converted byre. Under an Accredited Licence their eggs (first produced in December 1961) are sent away to be hatched and reared as broilers.

The labour force has been reduced to two. Labour was one of the major reasons for the reorganisation. Good labour became increasingly scarce and labour of any quality is difficult to obtain in Kirkby Thore because of the opportunities of higher wages at the gypsum mine. Another factor in the reorganisation was the relatively small profit margins on intensive milk production, when compared with beef cattle and sheep farming. Bridge End then, remains a high quality arable farm but now beef and sheep are the main elements.

KELD HOUSE (6722)

The farm at 475 feet is situated 1½ miles north of Appleby and the land is between 450 feet and 550 feet.(Fig.29) In general the soils are heavy although fields 7, 8 and 9 have medium-light soils.

KELD HOUSE FARM



0 220 440 Yards

KEY FIG. 26

FIG. 29

TABLE P

Keld House Farm: Land Use Summary

ARABLE	67%
Temporary Grassland	39%
Wheat	17%
Potatoes	5%
Oats	3%
PERMANENT GRASSLAND	33%

In contrast to Spitals and Bridge End this land is higher and heavier and consequently arable land is less important. (Table P and Table 8a). Temporary grass is the main crop and it is intensively farmed. After the silage crop in late May the grass receives 2 cwts. per acre of Nitro-Chalk (21% Nitrate). Then the fields are strip-grazed and finally grazed in the normal way.

Wheat is the second most important crop and the yield is high (33 cwts. per acre in 1961). Another valuable cash crop is potatoes and here again the 1961 yields were excellent. Early "Majestics" yielded 11 tons per acre, and the main crop "Redskins" 16 tons. A six year rotation is worked, namely potatoes - wheat - oats (undersown) - three years grass.

Because much of Keld House Farm is above 500 feet permanent grassland is more important than on the two other Valley farms. Here, 33% of the land is permanent grassland and another twenty

acres are rented (for grazing young stock).

As in the Valley region as a whole the land is farmed intensively and consequently it must receive heavy applications of organic and chemical fertiliser. At Keld House soil tests are made every three years. Usually the pastures are limed every four years (three tons per acre) and the heavy soils are treated with Basic Slag every three years. Temporary grassland receives three to four cwts. per acre of Complete Fertiliser, wheat three cwts. and potatoes twelve cwts.

The milking herd at Keld House averages 34 (Table 8b) and the average output per cow is 890 gallons a year. This herd is being built up slowly and the average age is three years. At the moment, all the calves are kept until their milking output can be assessed. Keld House is rather small when compared with most farms in the region. One result of this is that the farm does not carry any beef cattle.

The lambs of the Swaledale crosses are sold at the Appleby June Sales. The labour force comprises the farmer and two hired men with the addition of casual labour during the harvests.

On these three Valley farms the basic characteristics are a large proportion of arable land and an emphasis on milk production. In this agricultural region, most farms rear and

fatten beef cattle for sale when two years old. Again, a small flock of sheep is carried, to eat off roots and to provide lambs for the June Sales. Finally, since the Valley farms are the most intensively worked farms in the Eden Valley, a labour force of at least three is essential.

The Foothill Region

Situated between 500 and 750 feet the region has some of the characteristics of both the Valley and Hill farming regions.

Farms are larger than in the Valley region and 200 to 300 acres is typical. Permanent grassland is the main type of land use and on most farms constitutes between 45% and 75% of the total. Usually 20% to 30% is cut for hay each year. Arable land constitutes between 25% and 50% of the total. Finally on many of these farms there is a small acreage of rough grassland.

Every farm has a small dairy herd numbering between twenty and thirty. These farms are unable to support larger herds throughout the winter without recourse to large quantities of purchased fodder. Because rich temporary pasture and hay are less plentiful the annual milk yields are lower than in the Valley.

Because permanent grassland is so important beef stores and fat stock are more numerous than dairy cattle and up to

fifty are carried on most farms. If fat stock prices are good then all the young stores are fed up for sale at three years of age.

All farms carry a flock of sheep numbering between 250 and 500. The breeds vary within the Foothill region. In the west and south west Rough Fell and Border crosses predominate, whereas in the east Swaledales and Wensleydale crosses are the most common breeds. During the summer and autumn the rough pastures are grazed by the sheep but in winter and at lambing times many of the flocks are moved onto lower pastures.

Specimen Farms

LOW RUTTER (6816)

The farm situated at a height of 525 feet and two miles south of Appleby, stands on the eastern flanks of Hoff Beck (Fig.30). From the valley floor at 500 feet the land rises to over 600 feet. This landscape is gently rolling, typical drumlin country and the soils are rather heavy.

TABLE Q

Low Rutter Farm: Land Use Summary

ARABLE	51%
Temporary Grassland	35%
Oats	9%
Turnips	7%
PERMANENT GRASSLAND	45%

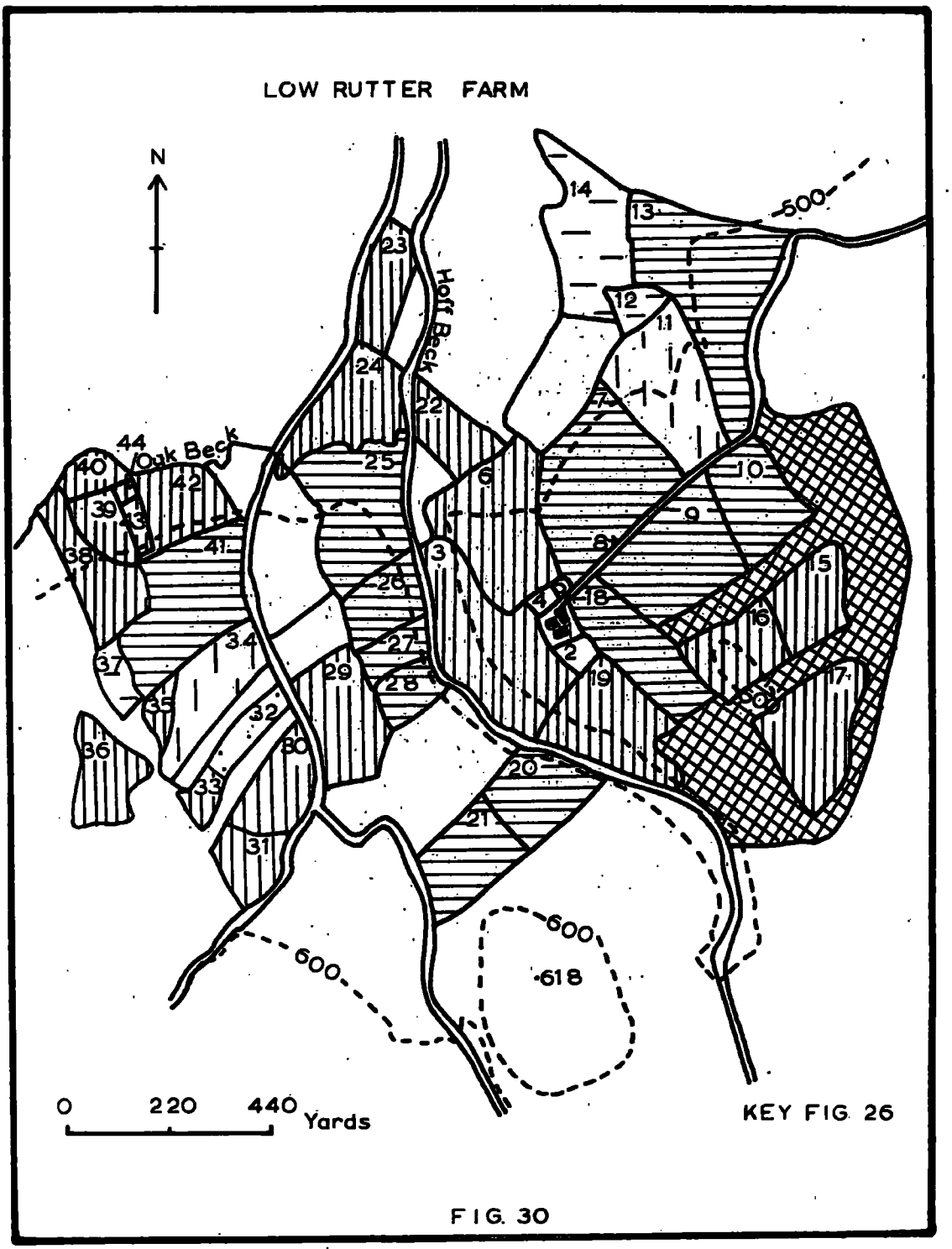

LOW RUTTER FARM
N
Hoff Beck
Oak Beck
500
600
600
618
0 220 440 Yards
KEY FIG. 26

FIG. 30

Here above 500 feet the important characteristic is the smaller proportion of arable land (Table Q and Table 9a). Temporary grass is the main crop, oats the only cereal and turnips the only other crop. The rotation followed is oats - turnips or kale - oats, - four years grass.

On these higher farms permanent grassland is much more important than in the Valley region. The woodland on the farm (Fig.30) was planted by the owner during the 19th Century, to provide a screen for race-horse trials. These woodlands now provide very good windbreaks and temporary homes for newly born lambs. Lambs are so often born during high winds, rain and in the early hours. Many lambs have been saved by having the shelter of the woodlands until daylight.

For a Foothill farm, Low Rutter has a large dairy herd. (Table 9b). Shorthorns remain firm favourites at Low Rutter. The Friesians have been gradually introduced during the last ten years because they give more milk, grow faster and milk longer before calving. Having retained the Shorthorns, Low Rutter can, when economic conditions deem it necessary, fairly quickly start to produce beef of quality.

In contrast to the Valley farms, the grazing season is shorter. At Low Rutter, cattle are never out before the last week in April and they come in by mid-November.

Few farms in the Foothill region carry more sheep. The breed, Teeswater is also rather uncommon, but they thrive on the farm and produce a good crop of lambs. The lambs are fattened on the turnips and sold during the summer and autumn. During the Autumn more sheep are bought to be fattened. Thus in most years over 600 fat animals are sold off the farm.

The labour force of one woman and three men is large for a Foothill farm and is equalled only by the best Lowland farms. A large labour force is necessary because of the emphasis on milk production.

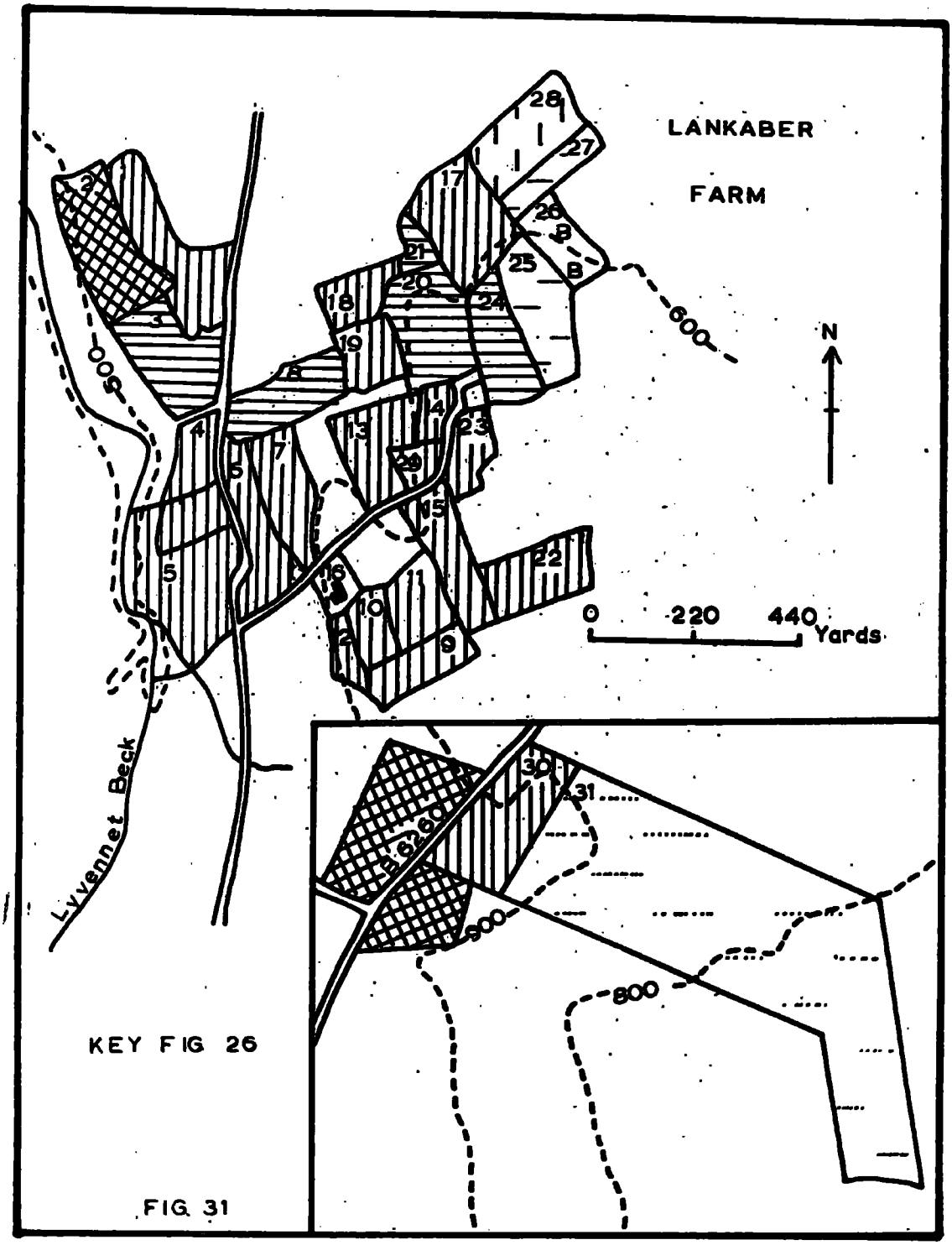
LANKABER (6218)

The house stands at 625 feet on the eastern slopes of the Lyvennet valley, and the land is between 500 feet and 675 feet (Fig.31). In addition there is an area of 65 acres of enclosed land at 900 feet on Maulds Meaburn Moor. In general the soils on the farm are heavy.

TABLE R

Lankaber Farm: Land Use Summary

ARABLE	20%
Temporary Grassland	12%
Oats	4%
Turnips	3%
Barley	1%
PERMANENT GRASSLAND	45%
ROUGH GRASSLAND	27%


LANKABER
FARM
N
0 220 440 Yards
600
500
800
Lyvennet Beck
KEY FIG 26
FIG. 31

On Lankaber, carable land is the least important element, indeed the enclosed moorland is larger (Table R and Table 10a). Temporary grassland comprises 12% of the total area. Oats grow reasonably well but the predominance of heavy soils, limits barley to 1%. The rotation used is oats - turnips - oats, four years grass. After the first hay crop the fields are limed, and both temporary grassland and turnips receive two to three cwts. of Compound per acre every year.

Permanent grassland is the backbone of Lankaber, and on this fairly heavy land, it is of good quality. Every Autumn, 40 acres receive ½ ton per acre of Basic Slag. Usually the fields are fit for grazing by early May and the season ends in early November.

The large area of rough grassland is two miles from the farm. (Fig.31). It is grazed by sheep for most of the year although young cattle are also grazed there during the summer. During the last war, ten acres of this land was ploughed and produced potatoes and turnips. Since then, this part has been permanent grassland. This instance does illustrate that many areas of rough grazing could be more productive.

Lankaber is a well balanced farm for milk, beef and sheep are all important. The dairy herd numbers thirty (Table 10b) and it is composed of three breeds. A similar number of beef cattle are carried to be sold at two years of age.

The flock of Cheviot and Suffolk ewes numbers 150. Suffolk lambs are good bulky animals and are normally sold when between 45 and 50 lbs. A June shearing at Lankaber produces an average Cheviot fleece of 4½ lbs. worth 4/10d per lb.

At Lankaber the labour force comprises two men. This is the normal size in the Foothill region.

WOODFOOT (6213)

The farmhouse is situated at 675 feet on the floor of the upper Lyvennet valley, and the land extends from the river to the open moorlands at 1050 feet. (Fig.32) On the valley floor the soils are fairly heavy but with increasing altitude the soils become lighter.

TABLE S

Woodfoot Farm: Land Use Summary

ARABLE	35%
Temporary Grassland	29%
Turnips and Kale	6%
PERMANENT GRASSLAND	58%
ROUGH GRASSLAND	2%

On this high-lying farm arable land comprises only 35% of which Temporary Grassland is the most important use. (Table S and Table 11a). In contrast to the other two farms

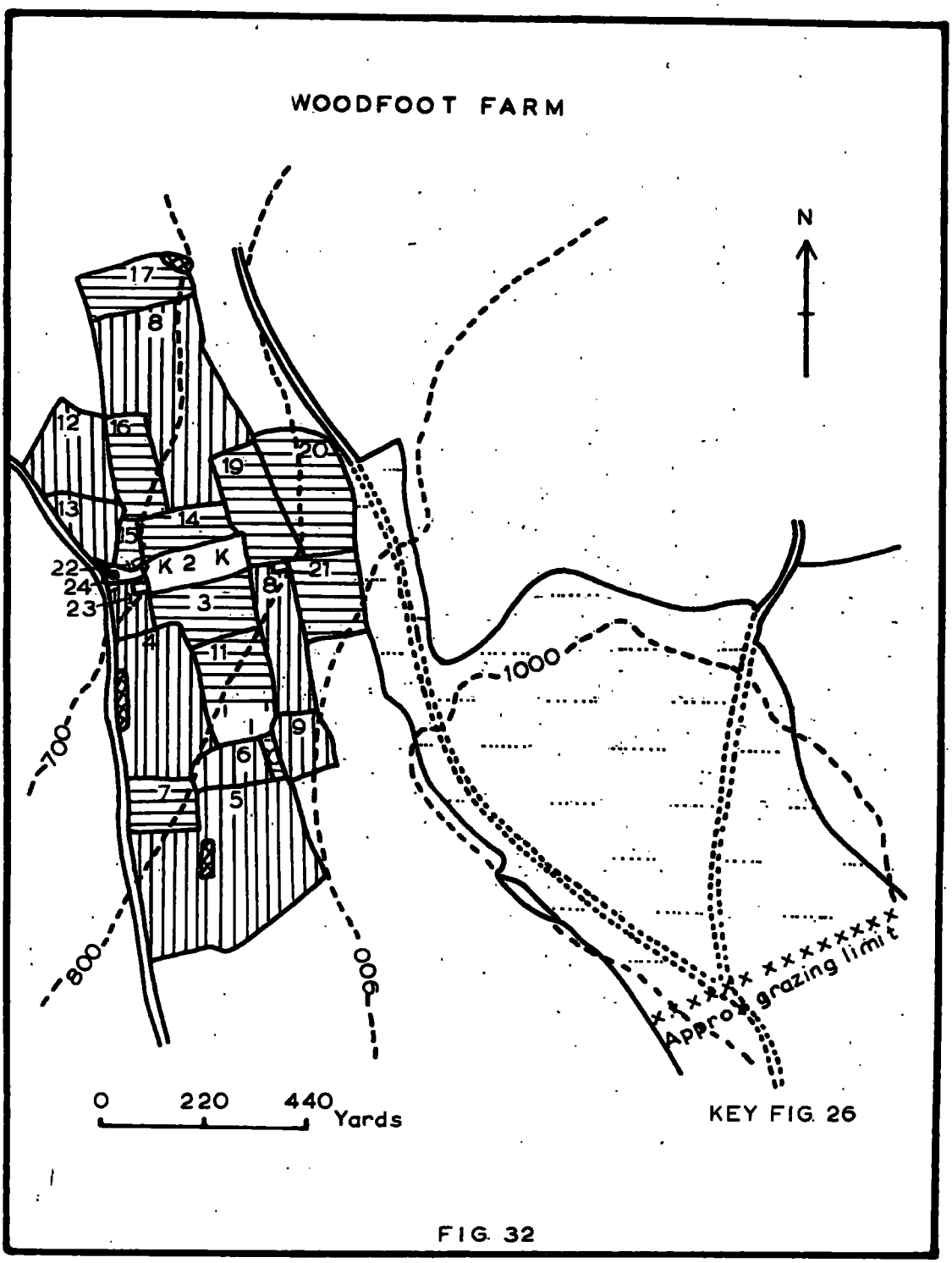

WOODFOOT FARM
N
17
8
12
16
19
20
13
14
15
K 2 K
22
24
23
3
21
8
4
11
1000
700
9
6
7
5
800
900
Approx grazing limit
0 220 440 Yards
KEY FIG. 26

FIG. 32

in the Foothill region, there is no cereal production.

The land on the valley floor is the most productive part of the farm. Woodfoot has its limitations and attempts to increase the hay crop, by using the higher fields, have failed. A ten year rotation is followed, namely oats - turnips - oats - seven years grass.

Permanent grassland occupies a larger area than arable land. All the fields receive regular dressings of Compound fertiliser and the best land is kept in good heart. Thus normally grazing starts on April 20th and continues until the first week in November. In addition Woodfoot has an area of enclosed rough grassland and another 200 acres on the open fell.

By any standards the dairy herd is small (Table 11b). More significantly, the yield is only 600 gallons per cow. Beef cattle are almost as numerous. These animals are bred on the farm and sold when about 15 months old. A lowland farm would carry these animals for another five or six months.

Sheep farming at the moment has one of the highest profit margins. The farm carries both pure Rough Fell ewes and Rough Fell - Teeswater ewes. An annual lamb crop of 220 is much lower than on the lowland farms.

In mid-March the Rough Fell ewes are brought from the open moorland for lambing. The few ewes with two lambs are

kept on the better pastures near the farm and all the other sheep return to the fell. The Teeswater ewes come off the fell for lambing in early April and after grazing the better grasslands, return to the fell in August.

Even in summer the open fell offers poor grazing. In January and February hay is taken up to the flock and from late February onwards, cake and sugar beet pulp is given to the lambing ewes.

Poultry kept in a Deep litter house and in batteries, provide a small but useful income. A farm such as Woodfoot is not easy to work but the total labour force of two is quite sufficient.

On these three farms above 500 feet there are differences in size and organisation but the three are distinctive as a type. In this Foothill region the proportion of arable land decreases and permanent grassland is the mainstay of the farm. In contrast to the Valley region, there is a greater dependence on beef cattle and sheep.

The Hill Region

Because of the low productivity of these areas over 750 feet the farms are necessarily very large and are normally over 800 acres. Usually between 50% and 70% of the land is Rough Grassland. The lower lying land round the farm is

permanent grassland and the arable land is rarely more than 10% of the total.

Hay is the main crop with some oats and roots. The hill farmer must usually purchase extra supplies of winter fodder and bedding material.

A small amount of hay may be taken from the permanent grasslands though the main function of such land is to provide grazing for sheep in winter and for cattle throughout the year.

Depending upon the pasture available between ten and thirty dairy cattle are kept. Very few farms even at 800 feet and 900 feet produce no milk for sale.

Shorthorns are more common than in the other regions and Galloways and Aberdeen-Angus, are grazed during the summer and sold as store cattle in the late autumn when grazing is increasingly difficult to obtain. Any fodder produced on the farm has to be kept for the dairy cattle and the sheep.

A large flock of sheep is the most characteristic feature of the Hill region. Over 1000 head is a normal number. The Hill region is the great reservoir of store-ewes so much in demand by the lowland farmers. The main lambing season is May. Most of the lambs are sold in the autumn as stores, in contrast to the lambs in the lowland region which are sold as fat lambs.

Specimen Farms

HARTLEY FOLD (7809)

Although the house is at 575 feet the enclosed land rises up to 1800 feet and the greater part of the farm is above 750 feet (Fig.33).

Hartley Fold is a highly productive Hill farm. Below 700 feet the soil is a high quality loam and between 700 feet and 1000 feet the permanent grasslands have been well farmed, and are of high quality. The acreage of permanent grassland is greater than on most farms in the Hill region.

TABLE T

Hartley Fold Farm: Land Use Summary

ARABLE (Temporary Grassland)	8%
PERMANENT GRASSLAND	51%
ROUGH GRASSLAND	40%

There is no regular crop rotation at Hartley Fold for the only crop is grass. These fields are ploughed when thought necessary and are then reseeded. A hay crop is taken off during the first year when the fields are grazed.

Permanent grassland is the greatest asset of Hartley Fold, and the grass is of high quality. It is liberally manured during the winter and in spring a light dressing of Compound stimulates early growth. Finally in the autumn, each acre gets 15 cwts. of Basic Slag. The normal grazing season

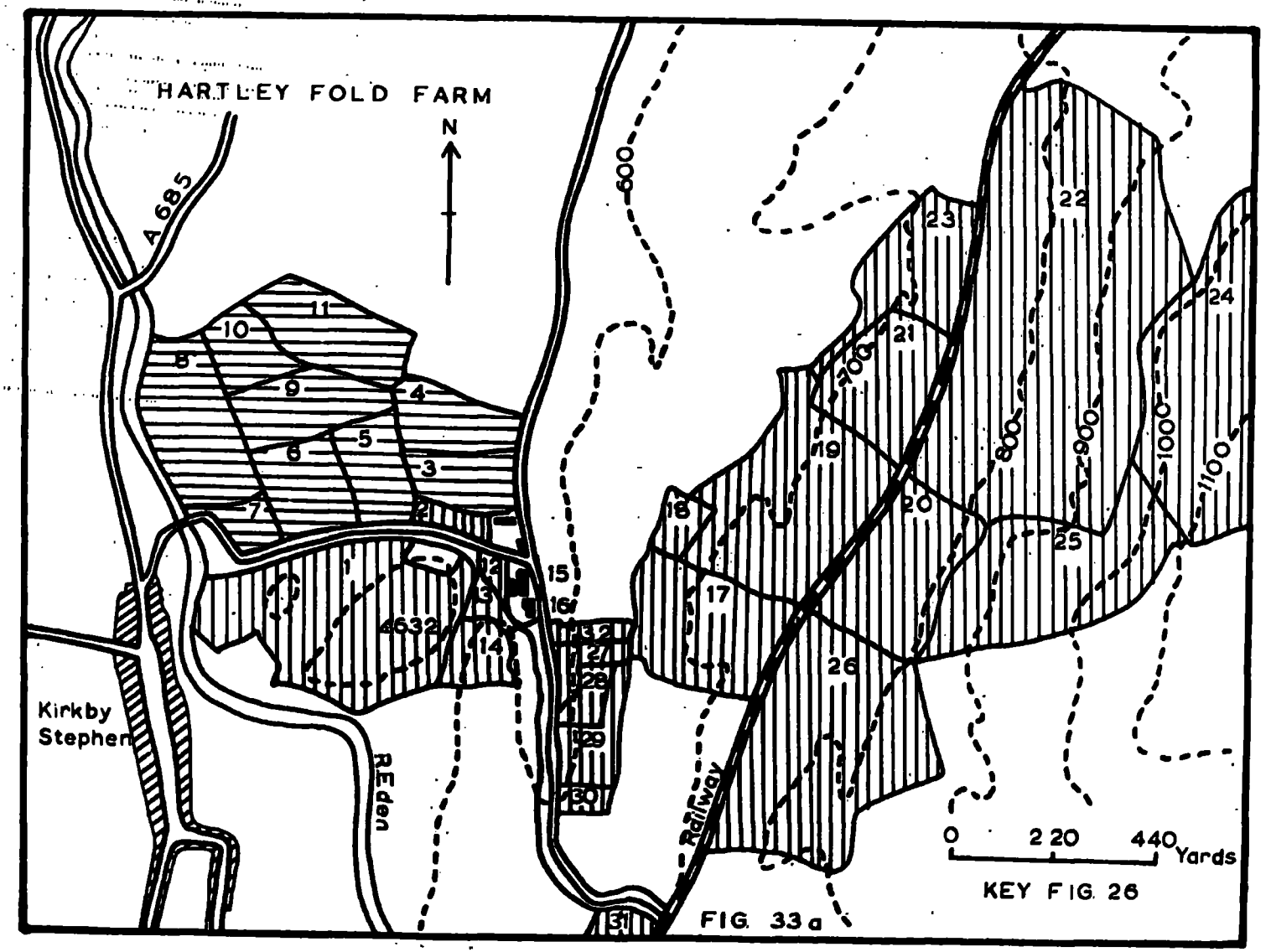
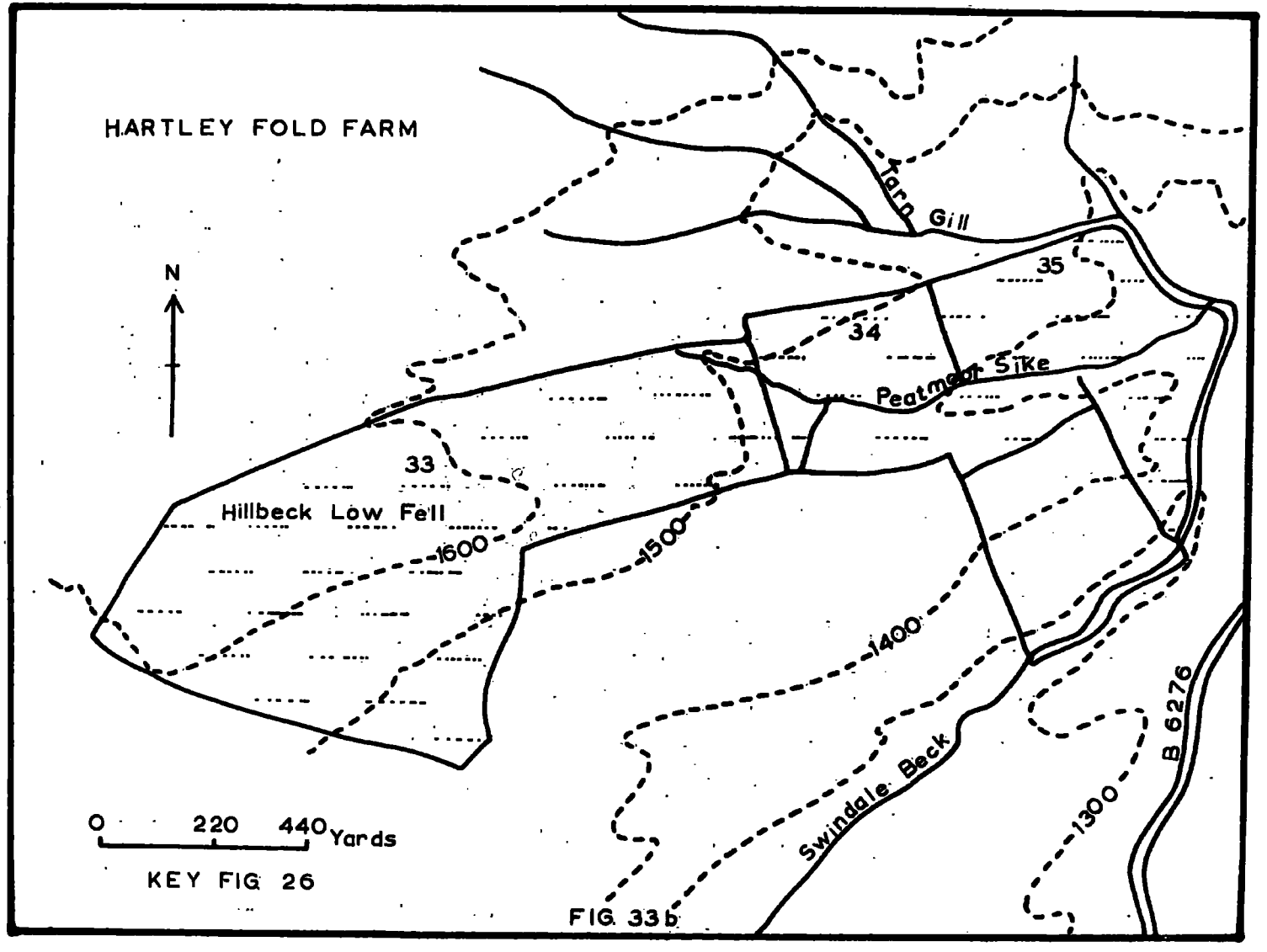

HARTLEY FOLD FARM
N
A685
600
700
800
900
1000
1100
Kirkby Stephen
R.Eden
Railway
0 220 440 Yards
KEY FIG. 26

FIG. 33a


HARTLEY FOLD FARM
N
Tarn Gill
35
34
Peatmoor Sike
33
Hillbeck Low Fell
1600
1500
1400
1300
B 6276
Swindale Beck
0 220 440 Yards
KEY FIG 26
FIG 33b

is from May 20th until early November.

Enclosed rough grassland comprises 40% of the farm and this land is five miles to the north on the slopes of Warcop Fell. In addition there are some 200 acres of open fell adjacent to the farm on Hartley Fell.

Because there is so much good pasture, the dairy herd is large for a hill farm (Table 12b). The thirty-two milking Shorthorns yield on average yield 820 gallons annually. The sturdy Shorthorn can graze on terrain where the heavier Friesians would have difficulty. There is a large number of young stock on the farm. Good heifers are retained but most are sold when two years old. Bullocks are kept until they are two years old. For instance in 1961, forty-four were sold at an average of £57.10.0d. Thus the Shorthorn herd has several functions. They are bred to sell as sucklers, to fatten up as beef cattle, to sell as heifers and to replenish the milking herd. Most farms in the Hill region cannot feed such large numbers of cattle.

Although cattle are so important Hartley Fold is a sheep farm with a very high reputation. During 1961 the farm carried 1618 sheep. Most of the 720 Swaledale ewes were crossed with a Wensleydale ram. The 657 crossed lambs were sold in the Autumn, as were the 224 pure Swaledale lambs.

The three enclosed allotments on Warcop Fell are usually grazed by the Swaledale ewes and in January these animals are brought onto the permanent pastures near the farm. These allotments usually carry between 200 and 250 sheep. The open fell grazing on Hartley Fell carries up to 350 sheep.

Shearing at Hartley Fold is a big occasion and although a clipping machine is used, five extra men are needed. This year's wool clip at 4/-d per lb. brought in £600.

Normally four men are employed full time. The fell pony is kept for visiting the sheep on the high moors and it is invaluable in gathering in the flock.

Hartley Fold can carry such a large flock because it has such a large area of Permanent grassland. Rather unusually for the Hill region the area of rough grassland is smaller than the permanent grassland. This is why this farm is one of the best Hill farms in the region. Milk, beef, wool and mutton are all produced very successfully.

HARBOURFLATT (7223)

The farmhouse stands at 900 feet just east of the fellside road between Murton and Dufton. Near the house are the few fields of arable and Permanent grassland. East of the farm the land rises quickly into the wild desolation of the Pennines. Thus the enclosed land is between 775 feet and 2000 feet bounded

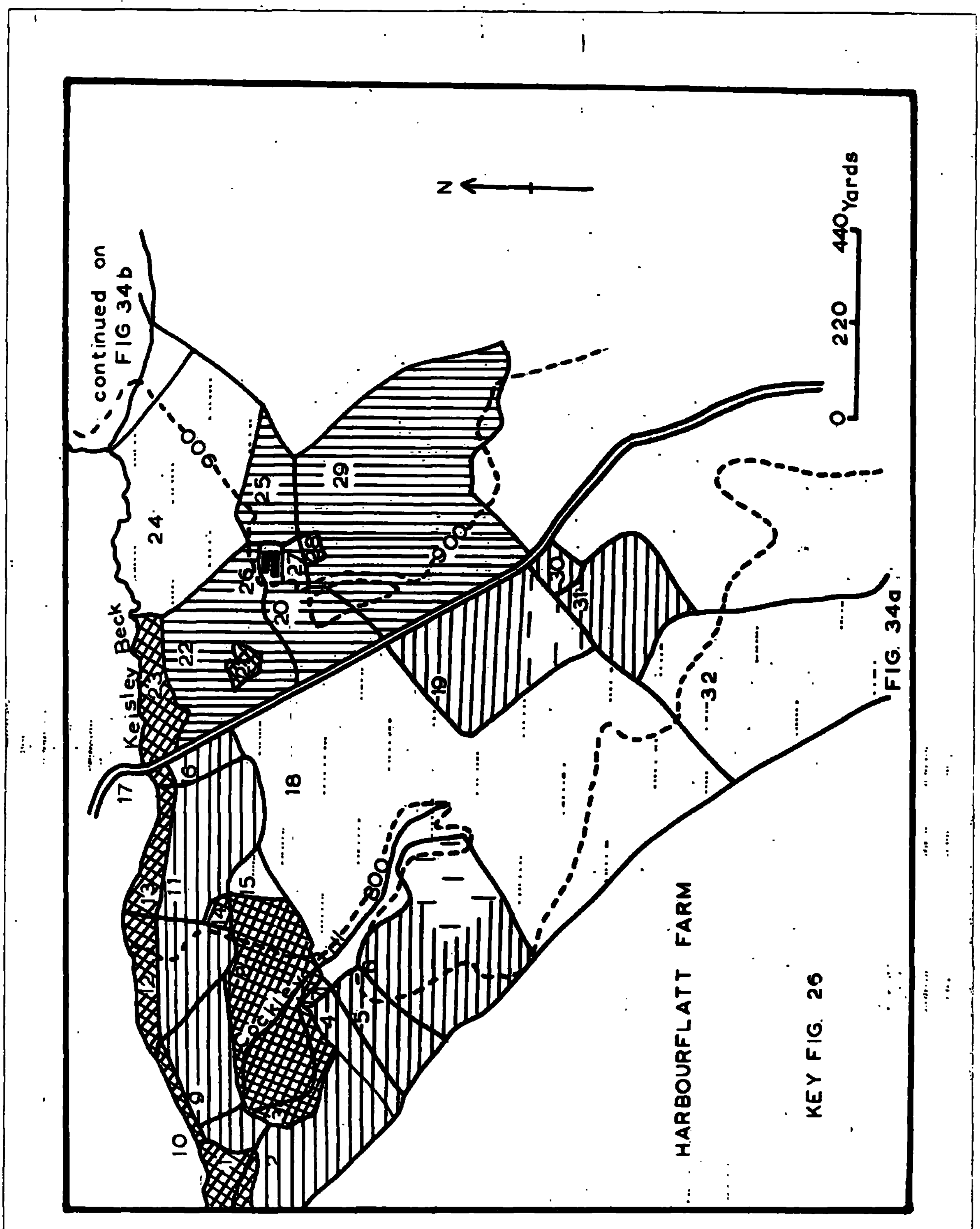
on the north by High Cup Gill (Fig.34). Below 1000 feet the soil is medium and field 6 is sandy.

TABLE U

Harbourflatt Farm: Land Use Summary

ARABLE	13%
Temporary Grassland	11%
PERMANENT GRASSLAND	9%
ROUGH GRASSLAND	75%
WOODLAND	3%

Temporary grass is the main crop on the small area of arable land (Table U and Table 13a). The only other crops are 8 acres of turnips and 6 acres of oats. Arable farming is unrewarding at Harbourflatt, for instance oats yield only 10 cwts. per acre, and the hay is never harvested before mid-July. In many years the hay crop is too poor to lift and instead is made into silage in late August. The rotation used is oats followed by grass for as many as twelve years. When reseeding takes place a mixture with a high proportion of white clover is favoured because the clover recovers well after the too-frequent cold spells in Spring. Harbourflatt is exposed to the full fury of the Helm Wind. This cold dry wind is particularly damaging to grass between January and May. The sheep lose weight quickly during much conditions. Quite


continued on FIG 34b
N
0 220 440 Yards
Keisley Beck
900
800
HARBOURFLATT FARM
KEY FIG 26
FIG 34a
1 2 3 4 5 9 10 11 12 13 14 15 16 17 18 19 20 22 23 24 25 26 27 28 29 30 31 32

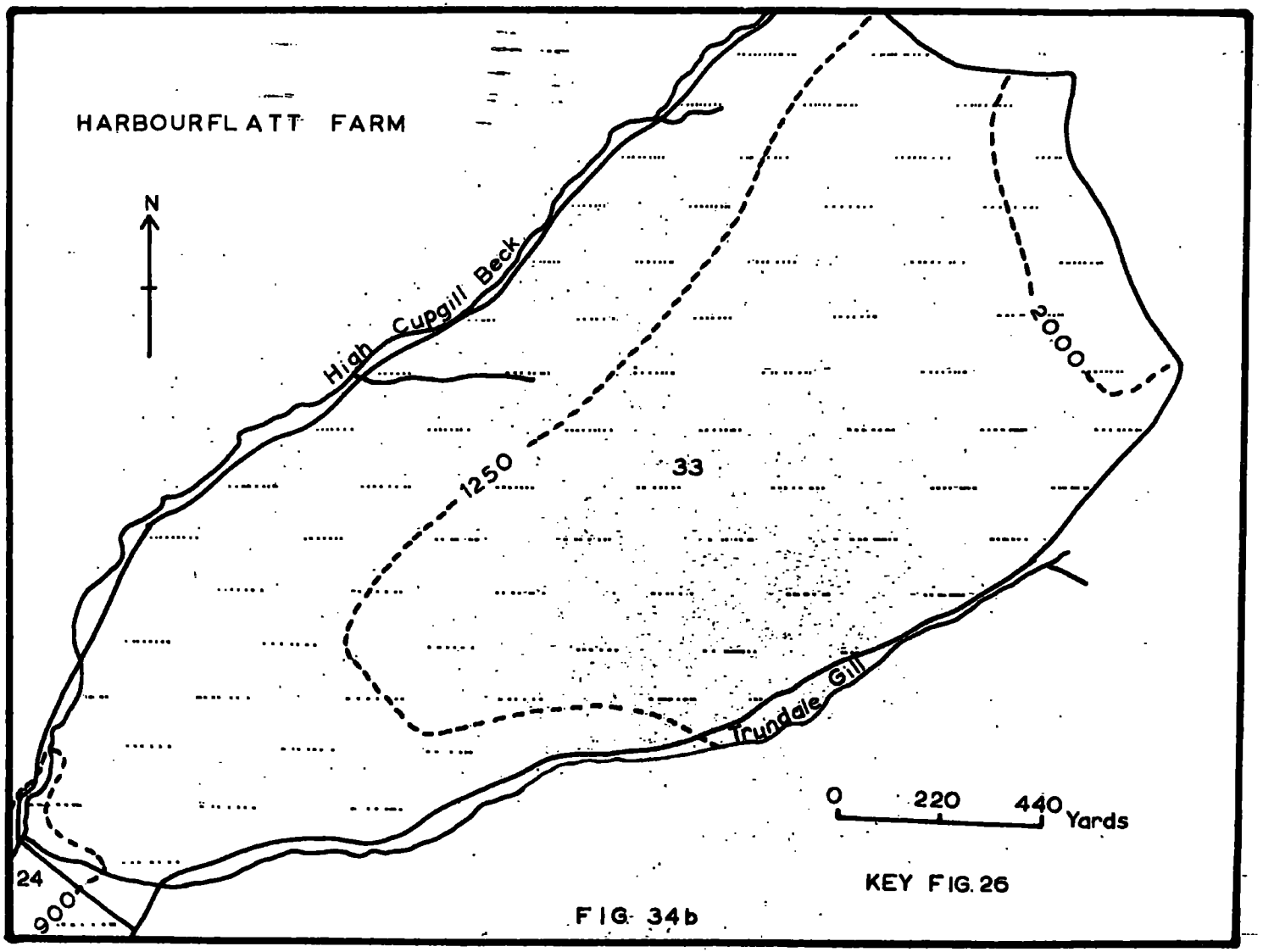

HARBOURFLATT FARM
N
High Cupgill Beck
2000
1250
33
Trundale Gill
0 220 440 Yards
24
900
KEY FIG. 26

FIG 34b

emphatically the Helm Wind was cited as the worst feature of Harbourflatt.

There is rather less permanent grassland than arable. Keeping the grass in good condition is not easy owing to strong winds, heavy rain and the short growing season. Every ten years each acre receives a ton of burnt lime and every year eight cwts. of Basic Slag. Field 33 is unusual in that the farmer can only graze it from April 21st until October 10th. For the rest of the year the Murton Commoners have the grazing rights.

An extensive area of Rough grassland constitutes 75% of the farm. As pasture the Rough grassland is neglected. It is grazed all the year and no fertiliser is ever applied. The vegetation has to maintain itself under harsh climatic conditions. Undoubtedly these high pastures are deteriorating. As run-off increases gully erosion is developing. Burning off heather sometimes encourages the development of bracken. In addition to the enclosed Rough grassland, Harbourflatt has grazing rights on the unenclosed moorland between Maize Beck and Swarth Beck (2500 acres). The number of sheep each hill farmer can graze is determined by the size of his enclosed land.

Below 1000 feet there are several areas of deciduous woodland, mainly oak, ash and hazel. Much of the woodland is

little more than scrub but it does provide poor grazing and more significantly, shelter.

As at Hartley Fold, milk, beef, wool and mutton are produced. The dairy herd is a Shorthorn herd (Table 13b). Milk is expensive to produce and the herd averages between 600 and 700 gallons per animal per year. The grazing season lasts from early May to early October. Usually 20 to 25 calves are reared to sell as beef.

During 1961 the farm carried a flock of 1450 sheep. The 500 Swaledale ewes and 220 gimmer lambs are the Heaf-going flock. The Heaf-going flock is the number of sheep that must be left on the farm whenever the ownership changes.

The 500 Swaledale ewes on average produce 350 lambs every year and they stay on the fell until lambing time in early April. The best gimmer lambs return to the fell in August whilst the weaker ones graze near the farm on the "fog" (growth after hay crop). During their first winter all the gimmers are grazed on the Solway marshes (cost is 22/6d per animal). All the Swaledale wethers are sold at the Autumn fat lamb sales.

After the Swaledale ewes have had four lambs they are crossed with a Teeswater ram. After lambing they are sold and the gimmers from the Solway replace them the following Spring.

Shearing is a big occasion at Harbourflatt, involving

eighteen men in 1961. Starting in early July, shearing lasts about a fortnight.

Harbour flatt employs three men all the year. Interestingly, the present tenant has his own lorry to transport sheep to the sales and to the Solway. In such a location as this it is most advantageous to be independent of hired haulage.

In conclusion then, the Hill region has two distinctive characteristics. The area of land regularly ploughed is very small and secondly there is a large area of Rough grassland, most of which is on unenclosed moorland.

CHAPTER 5

OTHER ECONOMIC ACTIVITIES

Although the activities are of a very varied nature, the economically active population can be classified into three major groups, Mining and Quarrying, Processing and Services (Table 14) and two minor groups, Defence and Out-of-Work (Tables 1 and 2).

The Mining and Quarrying concerns are mainly primary although in a limited way they all process the materials before distribution. A large proportion of the Services are located in the villages. Because the Eden Valley is an isolated, sparsely populated area services normally associated with urban areas are here frequently found in the villages. For instance there is a bank in Lazonby (5439) and a bakery in Langwathby (5633).

MINING AND QUARRYING (Fig.35)

For the last two hundred years mining and quarrying, although fluctuating in importance, have been well established in the region. In 1961 4.3% of the economically active population were employed in mining and quarrying.

Hillbeck Limestone Quarries (7915)

These quarries are at 850 feet, ¾ mile north of Brough. Limestone has been quarried here for 80 years and at present

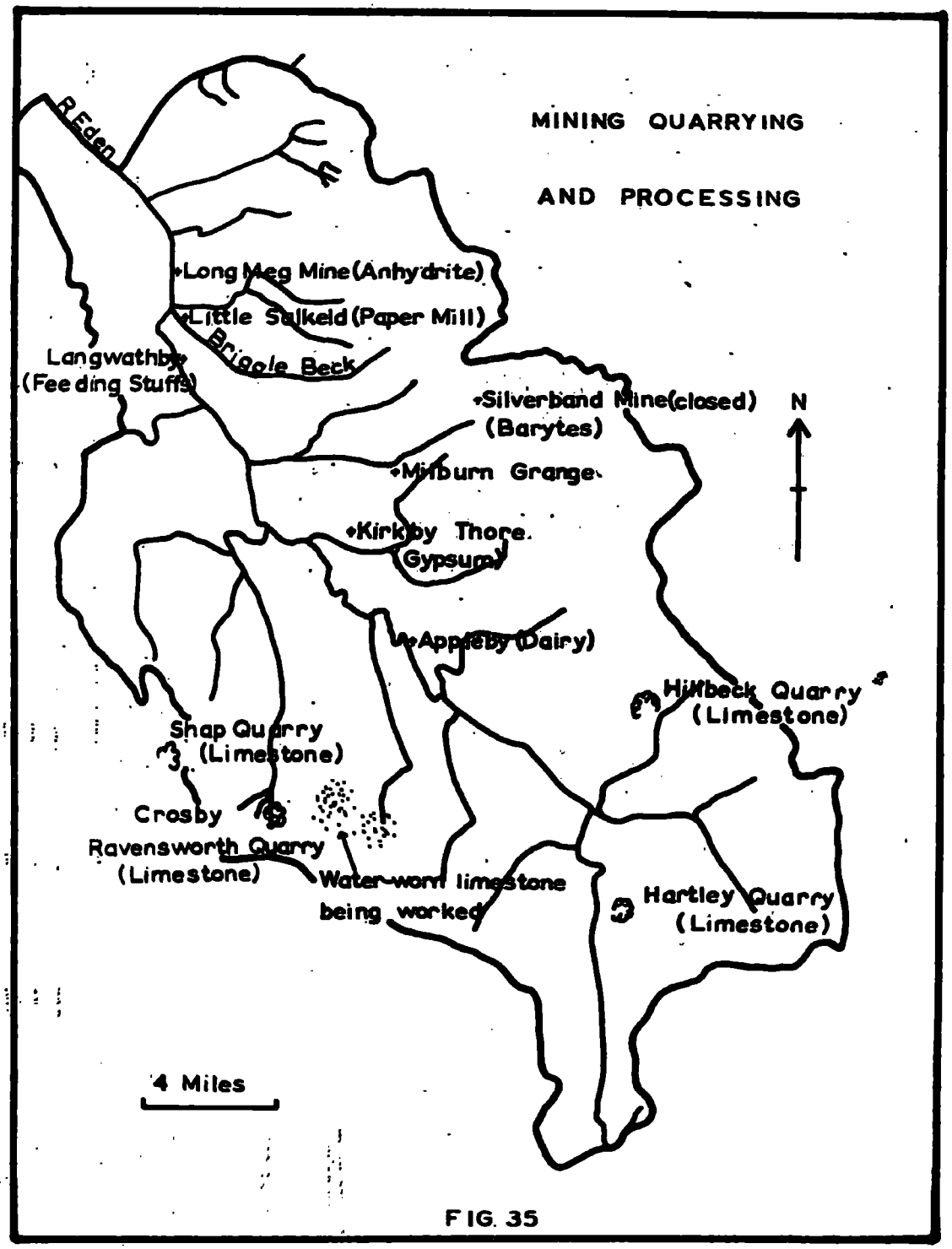

MINING QUARRYING
AND PROCESSING
R. Eden
Long Meg Mine (Anhydrite)
Little Salkeld (Paper Mill)
Briggle Beck
Langwathby
(Feeding Stuffs)
Silverband Mine (closed)
(Barytes)
N
Milburn Grange
Kirkby Thore.
(Gypsum)
Appleby (Dairy)
Hillbeck Quarry
(Limestone)
Shap Quarry
(Limestone)
Crosby
Ravensworth Quarry
(Limestone)
Water-worn limestone
being worked
Hartley Quarry
(Limestone)
4 Miles

FIG. 35

the annual output of Graded Stone is approximately 200,000 tons.

The limestone is of a high quality for it contains 98% $CHCO_3$ and 70% of the output is marketed as Graded Stone. This is used as a flux by the Tees-side Steel Industry. This was why the closing of the Stainmore line in 1961 was so strongly opposed. The remaining 30% of the output is used in almost equal quantities to make Tarmacadam and Bricks, Roadstone and Burnt Lime. All three have a local market. Local builders buy most of the 750,000 bricks made annually but the rest are marketed in Durham and North Yorkshire. Limestone chippings, being cheaper than granite, are used to surface and repair the many minor roads in the area. Burnt Lime is purchased by local farmers, but although there is a subsidy, demand is unpredictable.

The quarries employ a total labour force of 40. Half of these live in Brough and the remainder within 5 miles of the quarry. In order to provide an incentive to employees the quarry owner built 15 new houses in 1951. Employers in the Upper and Middle Eden Valley constantly emphasise the shortage of labour, but few of them have the resources to build houses for their workers. Thus many young people have to leave the region in order to find employment.

The quarry owner runs a fleet of 15 lorries to transport

men as well as materials. Road transport now has a vitally important role because the nearest railway is 5 miles away. The limestone from the quarry is taken to Kirkby Stephen to be routed to Middlesbrough via Carlisle. Lorries link the quarry with the railway, and now lorries deliver 20% of the quarry's products. This proportion is likely to increase still further.

Hartley Limestone Quarries (7808)

The quarry is at 750 feet, ¾ mile east of Kirkby Stephen and situated on the (now disused) railway line over Stainmore. Output here is usually about 220,000 tons annually. Of this 170,000 tons is marketed as Graded Stone and 90% is sold to the Steel Industry, mainly Teesside. The remainder is sold to local farmers and builders. In addition the company produces Kibbled Lime for local farmers and road chippings.

The labour force here numbers 70 and all of them live either in Kirkby Stephen or within 5 miles of the quarry. Hartley Quarries were very dependent on rail transport and 90% of the products were distributed by rail. Now that the line has closed their position is unenviable.

Crosby Ravensworth Limestone Quarries (6211)

This is a very small quarry, situated at 900 feet, two miles south of Crosby Ravensworth. The quarry does not work

at all regularly and at best employs no more than 6 men.

Shap Limestone Quarry (5713)

East of Shap at 1000 feet on Hardendale Fell a large limestone quarry is being developed. The quarry is owned by Colvilles Steel Works (Lanark). When the site is ready the stone will be transported by rail to Scotland. It would appear that the accessibility of the limestone is the principal factor in the development of the site. The main railway from Crewe to Glasgow is only 1 mile from the quarry and a link line is being constructed.

The progressive spirit of this venture contrasts with the feeling at Hartley and Hillbeck. There the railway links have now been severed. Prior to this the quarries were working to capacity. In 1950 both of these quarries employed double the present numbers and at Hartley they worked two shifts per day from Monday to Friday. The managements cited the depression in the heavy industries as being responsible for the drop in output.

Limestone Removal on Asby Scar and Orton Scar

Westmorland's water-worn limestone is in great demand for rockery stone and other decorative work. A contractor under licence from Westmorland County Council is now removing the best limestone pavement on these two moorlands. Every

year some 3000 tons are removed. This activity is now arousing considerable opposition in the area because the limestone pavement has a scenic attraction and also possesses a distinctive flora. When an area has been worked, and this it is rumoured involves blasting, its character is destroyed. Although the licence has been renewed the battle still rages. Local feeling was adequately expressed by the Councillor who said that "Westmorland's moorland is being destroyed in order to provide wretched status-symbols for suburban gardens!"

Silverband Barytes Mine (7031)

The mine is located on the western slopes of Great Dun Fell at 2,300 feet. Originally this was a lead mine but since 1939 the Laporte Company has produced Barytes. The Barytes ore is of the very best for it is of 50% Barium content. Over the past five years production has been between 10,000 and 15,000 tons per annum.

In the mine there are two levels. The "Top Level" is the old lead mine and it extends one mile into the fell. The "Intermediate Level" runs in 700 yards. At the minehead on the fell the ore is weighed then taken, in 12 ton hoppers, slung on an aerial ropeway, down to the dressing plant at Milburn Grange. This plant is 3½ miles from the minehead and at an altitude of 700 feet. Here the ore is crushed down to

7/10 inch and impurities (including iron and galena) removed. Galena output in fact totals about 35 tons a year. From Milburn Grange a second aerial ropeway takes the Barytes to the Long Marton railway station. Nowadays "barytes from our Silverband Mine is mainly used in the manufacture of barium compounds such as barium carbonate, barium monoxide etc." (Laporte Company).

Silverband employs a total of 60 of whom 44 are miners. Everyone works one 9 hour shift from Monday to Friday. The labour force is a fairly stable one, and 12 houses were built to encourage stability. Another 12 workers live in Penrith and a special bus transports them daily. All the other workers live within 2 miles of Milburn Grange.

The enterprise depends almost completely on rail transport. Most of the ore is sent to Luton by rail and local distribution in Northern England is by road. Railway costs are a heavy burden. Now rail transport is as high as the cost of mining the ore. By comparison road transport is only $\frac{2}{3}$ the cost of that by rail.

Every winter, mining operations cease for an average of a fortnight because of snow and ice on the approach road. An extreme instance was 1952 when mining was possible on only 4 days between 1st February and 1st May! Because the mine is at

2,300 feet on the escarpment, drifts up to 10 feet deep are quite usual. To alleviate the problem the ore is stockpiled at Milburn Grange and thus the processing plant can function continuously.

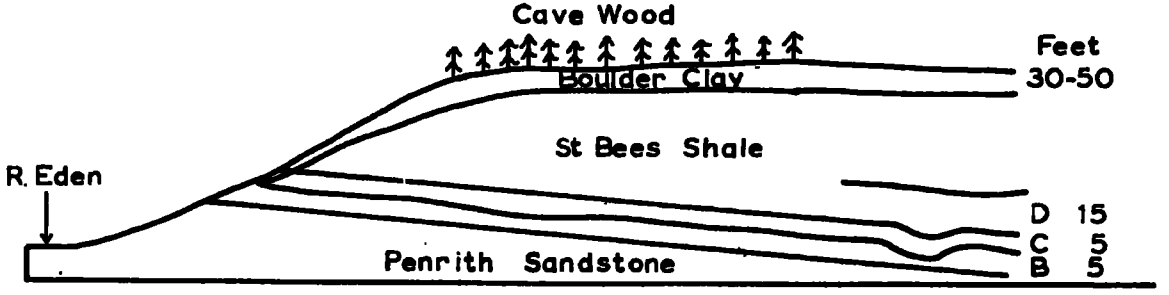
In September 1962 the Company announced that the mines were to be sold as a going concern. As yet no purchaser has been forthcoming. It is to be hoped that another owner will be found otherwise the mines will be closed and alternative employment is difficult to obtain in the area.

Long Meg Anhydrite Mines (5637)

The mines are situated at 270 feet on the bank of the River Eden (Fig. 35). Gypsum has been produced in Cave Wood since 1901 because the beds outcrop on the side of the valley. Since 1947 Long Meg has been a producer of Anhydrite (Fig.36). Now the mines extend up to 1 mile east of the minehead and ½ mile north and south.

Long Meg produces 240,000 tons of Anhydrite annually. The rock is crushed here, and 10% goes by rail to the Prudhoe fertiliser manufacturer. The remainder goes to Widnes to be made into Sulphuric Acid.

Now the mines are working to capacity and there are two shifts a day. The total labour force numbers 76 and of these 55 are miners. In order to build up a stable force the Company



GEOLOGICAL SUCESSION AT LONG MEG MINE

FIG. 36

built 50 new houses in Little Salkeld and here live 75% of the employees.

Gypsum, Anhydrite and Plaster, Kirkby Thore (6326)

Unlike the other concerns in this first group, Kirkby Thore is important as a producer of manufactured goods.

The gypsum deposits occur as discontinuous beds near the base of the St. Bees Shales. The River Eden follows this outcrop of unresistant shales and in turn the railway follows the course of the River Eden. The development of these and the Long Meg deposits was stimulated by the availability of rail transport.

Pure Gypsum is white but it varies from pink to grey-brown according to impurities. Chemically Gypsum is Calcium Sulphate containing approximately 21% water. When part of the water (usually 75%) is driven off in temperatures of 300°C the product (Plaster of Paris) on being reintroduced to water will reabsorb the same quantity. The needle-like crystals interlock to form a hard mass of plaster. Plaster of Paris (Hemi-Hydrate Plaster) sets very quickly so this is delayed and under the name of Retarded Hemi-Hydrate Gypsum Plaster, forms the basis of Portland Cement, Plasterboard, Hardwall and Finishing Plaster.

Anhydrite is found in varying proportions with Gypsum.

It is harder and is usually located in the central part of the beds. Anhydrite is de-hydrated Calcium Sulphate and although it has its uses for instance for making Ammonium Sulphate fertiliser it is less valuable than Gypsum. Unfortunately the reserves of Anhydrite are far greater than the Gypsum reserves.

Kirkby Thore and Long Meg mines are owned by British Plaster and Cement Company and they are quite the most important mining concerns in the valley. Gypsum was first quarried here in 1906 but mining didn't start until 1938. After the war new plant was installed and thus the Company were prepared to take full advantage of the post-war building boom. The growth of the industry is evidenced by Table V.

TABLE V

Estimated Production at Kirkby Thore (Tons)

	1939	1956	1961
Gypsum	59,000	156,000	192,000
Anhydrite	10,000	62,000	96,000
Plaster	81,000	306,000	260,000

In 1956 in order to meet increased demand, opencast workings were developed where the Gypsum is only 35 feet below the surface. At present 24,000 tons are produced annually. All of this is sent to Cocklakes (5 miles north

of Carlisle) where it is made into Plaster Board. The Gypsum retained at Kirkby Thore is made into the various plasters. All the Anhydrite is sold to I.C.I. who use it to make fertiliser.

The total labour force is 150. Excluding the clerical staff two shifts a day are worked. Miners and quarrymen number 75. Most of the men live in Kirkby Thore, many of them living in the 22 houses built by the Westmorland County Council. Workers living in Appleby and Penrith and anywhere between are transported by special buses.

The works are located on the railway. All the Anhydrite and half of the Gypsum is distributed by rail. The rest of the Gypsum and all the plaster is distributed by road. In every way the Kirkby Thore works are the outstanding mining and quarrying activity in the area.

PROCESSING (Fig.35)

The processing of local materials for a national market has increased in importance as communications have improved, during the last eighty years. Now "Production" employs 10.9% of the working population in the area.

Little Salkeld Paper Mill

In 1883 the mill was situated as Glassonby (5738) where water power was available. The present site beside the railway was chosen in 1900, when the mill needed coal for steam production.

The factory now uses 25 tons of coal per week in making steam to generate electricity and for the drying process. The plant generates ⅓ of the electricity used. Paper mills use great quantities of water and the mill here takes up to 3000 gallons per hour from Briggle Beck beside the factory.

The raw material is waste paper, consumed at the rate of 1500 tons per week. Lorries bring the waste paper, 40% coming from Carlisle. Other important sources are Penrith, Wigton and Newcastle.

Millboard is the product here and there is now a very extensive market. Important uses are reels for the textile industry, suitcases, stiff book covers, and oil-tanker gaskets. On average the yearly output of millboard is 1250 tons. It is distributed widely but the main destinations are London, Manchester, Glasgow, Edinburgh, Birmingham and Leicester.

The mill employs a total of 55 people, including 12 girls in the finishing department. All of the employees live in Little Salkeld and since it is a long established firm a very stable labour force has been developed. There are few labour

problems.

The major problem now is transport costs. Although the mill was deliberately located on the railway, rail transport now plays a minor role. All the coal and waste paper are delivered by road. Coal is thus 10/- a ton cheaper. About 70% of the millboard is delivered by road transport.

In fact the Little Salkeld Mill is one of the most active industries in the area. Certainly it is the only enterprise working 3 shifts per day from Monday to Friday.

Milk and Products - Appleby

The Express Dairy Company was established in 1931 as a milk and egg collecting centre. In those lean years it was started to encourage milk production in the area, because until then there was no large market for milk, in the Upper and Middle Eden Valley. In those early years the maximum intake at the Dairy was 10,000 gallons a day. At present the maximum intake is 66,000 gallons. In 1959 a cheese factory was added to the Dairy and this was extended in 1961.

The principal function of the Dairy is milk collection, and in an average year 20,000,000 gallons are collected. Half of this is redistributed by rail to London, Sunderland, Bradford and Dewsbury.

The Egg Department collects from an area stretching from

Lancaster in the south to Hesket-Newmarket in the north. On average some 3,500,000 dozen eggs are dispatched to London every year. The Egg Department grades the eggs - there are 21 possible defects, for instance large air cells, cracks, germinating eggs. All the 1st class (fault-free) eggs are sent to London, whilst the others are sold locally.

Since 1959 the Company has been making cheese which is then sent to "Kraft" in Liverpool. The recent extension will allow the cheese to be marketed from Appleby. The Cheese Factory uses 10,000,000 gallons of milk a year and during the summer they work three 8-hour shifts a day. In addition to cheese they also produce Whey Powder. This is sold both to bakers and ice-cream merchants and is also bought by cattle food manufacturers such as "B.O.C.M."

Every week the Cheese Factory alone uses between 1,000,000 and 2,000,000 gallons of water. The antiquated Borough supply could not meet this demand. Instead the Company bored and found large underground supplies. The Borough only supplies 60,000 gallons a week. The lack of water was the only major problem encountered by the Company. In every way the coming of the Dairy has answered a real need in Appleby. Appleby has always lacked industry and in recent years Appleby without the Dairy would have been in a serious plight. Railway employment has been steadily reduced. A new factor is the steadily

increasing numbers of school leavers in recent years. Thus the Dairy has helped enormously in lessening the flow of emigrants from the area. At present the Dairy is quite the largest single employer in the area. (Table W).

TABLE W

Employees of Appleby Express Dairy Company

Milk Department	68
Cheese Factory	60
Lorry Drivers	40
Maintenance Staff	16
Egg Department	12
Total:	196

Most of these people live within the Borough and up to two miles out but some travel from Penrith and Kirkby Stephen. To help solve the housing shortage the Company built 8 houses before the war and 7 since 1945. A small sample of employees (from the Egg Department) serves to illustrate the general picture. Of the 12 people, 8 live in Appleby, 2 at Burrells (1½ miles south of Appleby), 1 at Long Marton and 1 at Brough.

The Dairy has had a most beneficial effect on the area's economy. Farmers have an efficient milk collecting service for the first time, and this stimulus to milk production has influenced most farmers in the area. Secondly the Dairy has

created almost 200 jobs and when the Cheese Factory extensions are completed there will be more vacancies. Because the Dairy is but one of the factories in the Company opportunities for promotion provide a further incentive for the local people. Such opportunities have not existed before in Appleby. The size and importance of the Company may be judged from the figures given below. (Table X).

TABLE X

Express Dairy Company Output (National Totals)

	1956-57	1960 - 61
Liquid Milk	101,000,000 gallons	157,000,000 gals
Manufactured Milk	22,000,000 "	64,000,000 "

(i.e. Cheese, condensed milk, milk powder, cream and butter).

TOTAL SALES £70,000,000

Other Processing Industries

In keeping with the dominantly agricultural economy there is an animal foodstuffs factory at Langwathby. Here the feeds are made up from constituents purchased wholesale.

At Long Marton and Soulby there are small slaughter houses supplying meat to some of the local butchers. The wholesale Timber Merchants at Kirkby Stephen, Hunsonby and Crosby Ravensworth supply the demands of local builders and farmers.

During the past 10 years or so there have been many suggestions for additional industries in the area. In October 1962 a welcome additional employer was the Hosiery Company at Kirkby Stephen. This factory is an offshoot of the main Kendal one and when working to capacity it will employ 20 girls producing machine-knitted woollen stockings and socks.

SERVICES

This activity has steadily increased in importance and now employs 43.8% of the working population.

Food Retailers are the largest group and undoubtedly they are less specialised than the urban retailer. Almost every village has its shop, selling a very varied range of products. The larger stores in Appleby and Kirkby Stephen send out travelling shops into the surrounding areas.

Professional services include the usual ones such as Doctors, Solicitors, Bankers and Veterinary Surgeons.

Other Retailers are markedly concentrated in Appleby, Kirkby Stephen and Brough. Otherwise only the largest villages have other Retailers, for instance, Kirkoswald, Lazonby, Warcop and Kirkby Thore. Usually size alone is not the important factor in the development of Retailing. At Kirkoswald the small summer tourist trade explains the Antique and China Shops, Lazonby Livestock Auction brings in many people, and

there is a large Car Showroom. At Warcop there was a large Army Camp during the war and thus developed the draper, cobbler and newsagent.

Other Retailers characteristic of the area are the Agricultural Merchants supplying feeding stuffs, and Engineers dealing mainly with implements and other machinery now found on farms. Finally there are four livestock auctions in the Eden Valley, at Brough, Kirkby Stephen, Appleby and Lazonby.

DEFENCE

That this group, employing 1.5% figures in the employment table is mainly because there is an army training ground at Warcop (7415). During the last war this was a very important camp specialising in long range firing and tank work. Now it is used for short training courses and for most of the year only carries a small staff.

OUT-OF-WORK

Although the numbers in the group are fairly small, 1.2%, the situation is viewed pessimistically. There would be a much larger number in this group were it not for the steady flow of people, particularly the younger ones, out of the area. Any unemployed, no matter how few, are difficult to absorb because the region has such a narrow resource base, a problem discussed in more detail in Chapter 8.

In conclusion, the economy of the region is still firmly based on farming, with some mining and quarrying, as it has been for 500 years. Coal quarried on Stainmore since 1389 was sold in Appleby until the 19th Century. Lead was mined in the Pennines from 1692 until 1905. At the moment gypsum and limestone are worked. The minerals are different ones and farming has changed beyond recognition, but there can be few areas in England basically so unchanged since 1400 as the Eden Valley.

CHAPTER 6

SETTLEMENT

In order to appreciate the characteristics of settlement in the region today it is necessary to consider the forces that influenced the development and spread of settlement in the past.

History of Settlement

In the light of information available at the moment it is not possible to assess the influence of the early British settlers. The civilising influence of the Roman occupation in this frontier zone was of only local importance, and after the abandonment of the frontier in A.D. 383, it must have faded. Certainly the Britons, quite apart from political groupings, did not possess a single culture or economy. Later Anglian and Norse immigrants settled the area, but although they mixed with the British, the part played by the British in the development of the settlement pattern, remains rather vague.

The settlement of North England by the Angles started on the east coast after A.D. 603. Their entry into Cumberland and Westmorland was facilitated by the Roman Roads over Stainmore and through the Tyne Corridor. Using the evidence

afforded by early place-names Anglian settlement was not important west of the Pennines. Names ending in "-ing" (where the terminal is derived from "inga") and "ingham" are indicative of early Anglian settlement.[1] In the Eden Valley there is only one example, Addingham. There is now no village of this name but there is an ecclesiastical parish of Addingham in the parish of Hunsonby (5835). From this one instance it would seem that the essentially British character of the population was not much altered until the coming of the Norsemen.

From A.D. 900 there was a large scale Scandinavian immigration into north west England from landings on the west coast. The Norsemen probably moved into Cumberland and Westmorland from earlier settlements in Ireland and Scotland. Consequently the Norse speech was modified and one way in which this is revealed is in the invertion of the order of the compounds, as in Irish. For instance the name Kirkoswald (5541) is of similar origin to that of Downpatrick.

Norse settlement was very extensive and although it overlay some earlier Anglian settlement it was chiefly a British substratum on which it was imposed. Later the Norse people spread from the Eden Valley over Stainmore into North Yorkshire.

1. Smailes A.E. "North England" p.87, 1961.

Again using the evidence of place names the suffixes "by", "thorp", "thwaite" and sometimes "ton" are indicative of Scandinavian settlement.(Table 15)[1]

In the region there are 53 nucleated settlements and in 23 instances there is a Scandinavian suffix (Table 16). The most common suffix is "by", but in the village names there are no "thwaite" endings. The "thwaite" element does occur in the names of several individual farms, for instance Lounthwaite (6430) and Burthwaite (6923).

By the 12th Century the prevalent system of agriculture in North England was more closely related to the Scottish run-rig system than to the open field system of the English lowland. The more scattered cultivation of the run-rig system led to the development of hamlets, much smaller settlements than in the area where the open field cultivation was predominant. During the Middle Ages the settlement pattern developed in two ways. Herdsmen tending livestock on high-lying summer pastures lived in "sheilings" and some of these developed as permanent homes. Secondly, as the population increased new townships had to be developed. Many place names point to this origin, for instance Newbiggin and Murton.[2]

Following the Norman Conquest, large tracts of country

1. Dury G. H. "Map Interpretation", p.111, 1952.
2. Smailes A.E."North England" p.96, 1961.

had been reserved as hunting preserves, for instance Milburn Forest. In the 13th and 14th Centuries settlement was allowed to spread into some of these forests, when it was seen to be advantageous. For instance silver and lead mining in the Pennines was encouraged because it increased the revenue of the King and Bishop.

During the Middle Ages then, settlement progressively encroached upon woodlands and moors. In the process not only was the pattern of settlement extended and filled in but it also became more dispersed.

By the 14th Century the degree of nucleation of settlements had probably passed its peak and more secondary settlements were being established, and the area farmed was being extended. Certainly the proportion of the rural population living in clustered settlement was greater than now. Almost all the villages existing today were established by the 14th Century, by which time a stage of maturity had been attained in the process of agricultural colonisation.

In Cumberland and Westmorland although the medieval villages were scattered over the drift covered lowlands below 700 feet there were three typical sites. One was along the foot of the Pennine escarpment. In the drumlin landscape of the Eden Valley other villages developed in sheltered sites between drumlins. The banks of the Eden's tributaries were

favoured because the main river itself was incised. Although the sites were established in the Middle Ages, in general of course the buildings do not remain. Important exceptions are castles and fortified farms.

The 14th Century ushered in a period of disturbed political conditions. Frequently the town fields were surrounded by earthen dykes, for instance at Great Salkeld (5437). The village enclosing a village green afforded some shelter for livestock on the green.

Since the 14th Century the settlement pattern has been modified by the extension of the agricultural frontier and by still further dispersal. While new farmsteads have appeared beyond and between the old clusters the number of clusters has certainly been reduced. Finally since the mid-19th Century rural depopulation has caused a still further reduction in the size of nucleated settlements.

The Present Pattern of Settlement

In studying the settlement pattern in any area three major considerations must be, the composition of the pattern and the distribution and the function of the elements composing the pattern. This present study is based mainly on field work in which particular attention was given to the function of each building.

In the upper and middle Eden valley the settlement pattern is composed of isolated houses and farms, villages and another group of larger nucleated settlements. This third group is made up of Appleby, Kirkby Stephen and Brough. These three have developed where "A" and "B" roads converge and by virtue of their highly developed functional structure, when compared with other settlements in the area, these three can be termed urban settlement.

The distribution of settlement is closely controlled by altitude and slope. In the Eden Valley, on gentler slopes, the limit of settlement is generally 800 feet, but on level, sheltered sites, settlements are found up to between 900 feet and 1000 feet. Thus it is appropriate to consider the characteristics of settlement within the framework of the four physical regions.

Isolated Settlement

There is no single definition of this term and each area must be assessed on its own merits. In the upper and middle Eden Valley the writer decided that settlements more than 220 yards distant from nucleated settlement can be termed isolated. The farm and other dwellings must be defined. A farm is defined as a dwelling with appropriate outbuildings used for agricultural purposes. As a minimum these include a barn for

fodder storage and hulls for livestock. The absence or disuse of such outbuildings would classify the unit as a house.

In the region there are 706 isolated settlements (Fig.37 and Table 17) and their distribution is shown on Fig.38.

Farms, numbering 415, are the main element and are found from 260 feet to 1400 feet. One common characteristic is that all the farms are sited near a supply of water. In the Eastern Uplands, spring-line sites are common, whereas below 500 feet the tributary streams are favoured. When situated in a valley the farms are sited well above the damp valley floor. In all cases the farms are sited well below the limit of improved land.

Houses in the region number 291 and the altitudinal range is from 275 feet to 1225 feet. (Fig.37). In the upland areas many of the houses are or have been for farm workers. Some houses in the lowlands have the same function but here large numbers have been built privately and by the Local Authority, for people other than farm workers.

Upper Valley

The number of farms in an area, to some degree, reflects the productivity of the land (Table 18). In the Upper Valley there are 17% of the area's farms with a density of 1.7 per square mile. Altitudinally the farms range from 500 feet to

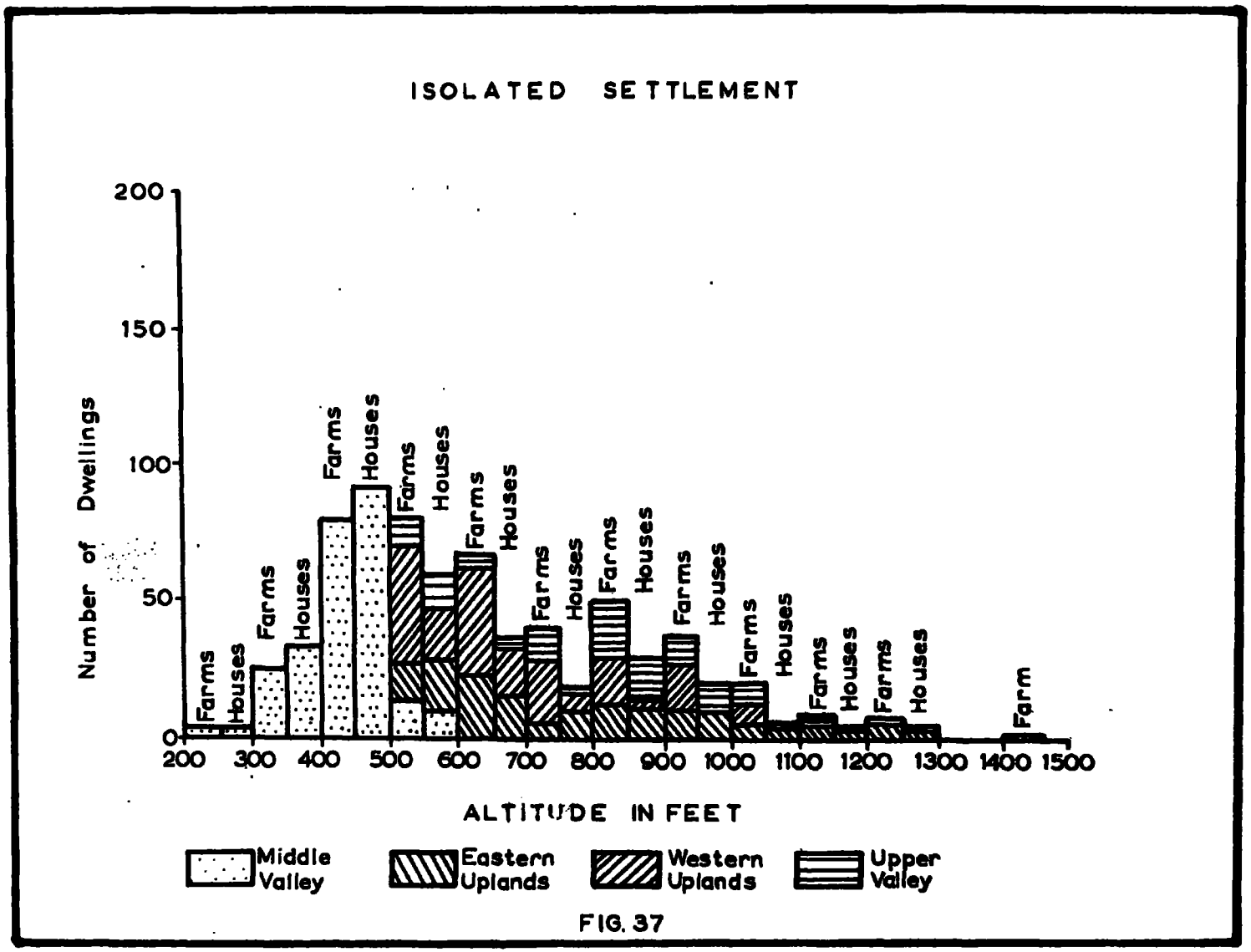

ISOLATED SETTLEMENT
Number of Dwellings
200
150
100
50
0
Farms
Houses
Farms
Houses
Farms
Houses
Farms
Houses
Farms
Houses
Farms
Houses
Farms
Houses
Farms
Houses
Farms
Houses
Farms
Houses
Farms
Houses
Farms
Houses
Farm
200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500
ALTITUDE IN FEET
Middle Valley
Eastern Uplands
Western Uplands
Upper Valley

FIG. 37

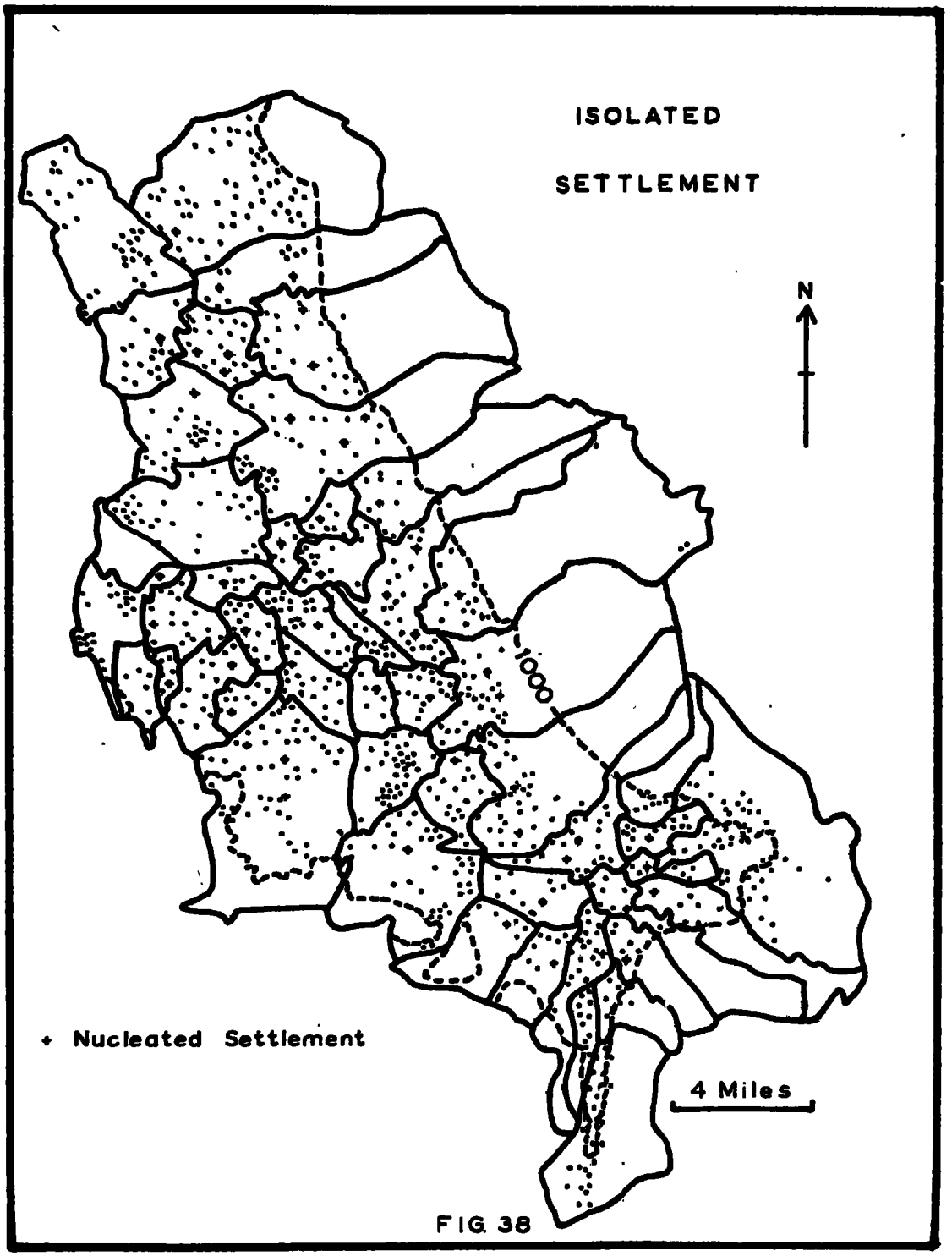


FIG. 38

1275 feet and 59% are between 700 feet and 999 feet. All the farms in the Upper Valley can be classified as hill farms with a large acreage of rough grazing.

The average density of 1.7 is particularly high for such an area. This may be explained by the existence of many gentle and level slopes on the broad glaciated valley floor. Here the land can be periodically ploughed and the soils are moderately good. Thus the proportion of such land to the moorland is relatively high. By utilising the broad valley floor as well as the rough grazing many farms of an economically efficient size could be established. Had the imprint of glaciation been less bold the number would have been smaller.

Houses in the region represent 15% of the total and range from 550 feet to 1200 feet. The density of 1 per square mile is higher than in the Eastern or Western Uplands. Some 58% occurs between 800 feet and 999 feet, a distribution comparable to that of the farms. Most of these houses were originally built for farm workers. Before the advent of motor transport houses near the farms were essential. The number of farm workers has decreased and nowadays people other than farm workers live in these houses, for instance people working in Kirkby Stephen. Some of the houses are used as weekend and holiday cottages. The several examples

of farms and houses in ruins testify to the steady rural depopulation since 1860. After 1870 there was a reduction in the amount of arable land and a swing to livestock rearing.

Eastern Uplands

Physically this region has much in common with the Upper Valley. The 74 farms comprise 18% of the total but here the density is only 0.4 farms per square mile. Altitudinally the farms range from 510 feet to 1400 feet, there being 47% between 500 feet and 699 feet and another 29% between 800 feet and 999 feet. In contrast to the Upper Valley there is a larger area below 750 feet and also most of this land is gently sloping. Above 800 feet the number of farms is comparable in the two regions.

Houses in the area number 64, that is 22% of the total but the average density is only 0.4 per square mile. The houses range from 525 feet to 1225 feet and 45% are below 699 feet. This is partly related to the number of farms at this lower level. Also the number reflects the greater accessibility of the foothill belt and its closer proximity to the more populous lowlands.

Western Uplands

In this region the 148 farms represent 35% of the total and the average density is 1.3 per square mile. Altitudinally

the farms range from 475 feet to 1100 feet and in contrast to the Eastern Uplands, 71% are below 799 feet. The reason is that on this limestone dipslope the limited supply of surface water means that settlement is mainly located along the major streams or on spring lines on the valley sides. Five large streams flow from south to north and their interfluves are almost devoid of settlement.

North of the Eamont the sandstone uplands declining in height northwards from 900 feet, imposes even stricter limits. Of the twelve farms, nine are between 500 feet and 575 feet, and all the farms are either beside a stream or at the spring line.

The Western Uplands contain almost twice the number of farms in the Eastern Uplands and the average density is higher. This is due to the generally lower altitude of the Western Uplands. Secondly south of the River Eamont, in the limestone area, there are five large valleys aligned south to north. These valleys provide a ready supply of water and because they are deeply incised, they form sheltered sites, both from prevailing westerly winds and the cold easterlies common in Spring. These narrow tongues of lowland are surrounded by bleak moorlands. Mainly below 600 feet, the valley floors provide gentle slopes and good quality soils. The land can be

fairly intensively worked and thus the number of farms is relatively high.

Houses in the Western Uplands represent 15% of the total and the density is 0.4 per square mile. Altitudinally the houses range from 525 feet to 830 feet and 80% are between this lower limit and 699 feet. Surprisingly there are only two more houses than in the Upper Valley and the density is much less. In the days before piped water supplies isolated sites having a good water supply were less numerous than in the Upper Valley. Consequently nucleated settlement developed more readily. Farm workers could live in the villages because their employer's farm was normally also on the valley floor. The isolated houses built since 1900 are numerically unimportant.

Middle Valley Lowlands

Farms, numbering 124, represent 30% of the total. Altitudinally they range from 260 feet to 525 feet and 87% occur between 300 feet and 499 feet. In contrast to the other areas farms here are fairly evenly distributed and the density is 1.8 per square mile.

The lowlands are quite the most favourable area for settlement. Water was readily available from the many streams

and the high water table facilitated the construction of wells. Gentle slopes combined with a variety of alluvia, silts, gravels and clay soils, provided the most productive farming conditions.

Isolated houses in the area are numerically quite outstanding and represent 48% of the total. The average density is 2 per square mile. The large number of houses reflects several factors, all of which apply to settlement in villages of course. Many houses were formerly farm workers cottages and there were more of these here than in the less productive regions. Today this area is able to attract farm workers more easily than the other regions.

The lowland region does have resources other than the soil, for instance the Kirkby Thore gypsum works and the Appleby Dairy. Again this is the most accessible region being bisected by the A66 and having the one remaining railway. People working in Penrith and Carlisle can live in the area without undue inconvenience. This lowland region offers the pleasures of rural life without the remoteness characteristic of the other regions. Clearly it is the most attractive residential area.

Nucleated Settlement

In the upper and middle Eden Valley the second element in

the pattern of settlement is nucleated settlement. In this area a group of dwellings numbering more than five has been classified as nucleated and there are 53 such groups. (Fig.39 and Table 19). One common characteristic of 51 of the settlements is that they are sited on streams. Great Strickland (5522) and Reagill (6017) are the exceptions. In both these is an old well and just south of Reagill there is a spring.

Within the region the building stone varies from the warm New Red Sandstone in the lower valley to the harsher Carboniferous limestones and sandstones of the uplands. As a building material, stone is much more important than brick. Only houses built within the last forty years are brick built. Also it is generally true that houses built since 1920 are slate-roofed whereas older ones are roofed with stone slabs. Suitable slate was not available within the region and it was expensive to transport it from other areas.

The morphology of the villages offers a second basis for classification. Street Villages numbering 37 are the commonest and are widely distributed from Kirkoswald (5541) at 260 feet to Murton (7221) at 800 feet. An interesting type of Street Village occurs in the narrow valleys of the Western Uplands. Here, on cramped sites the villages are in some cases bisected by the streams, for instance Great Asby (6813) and Crosby Garrett (7209).

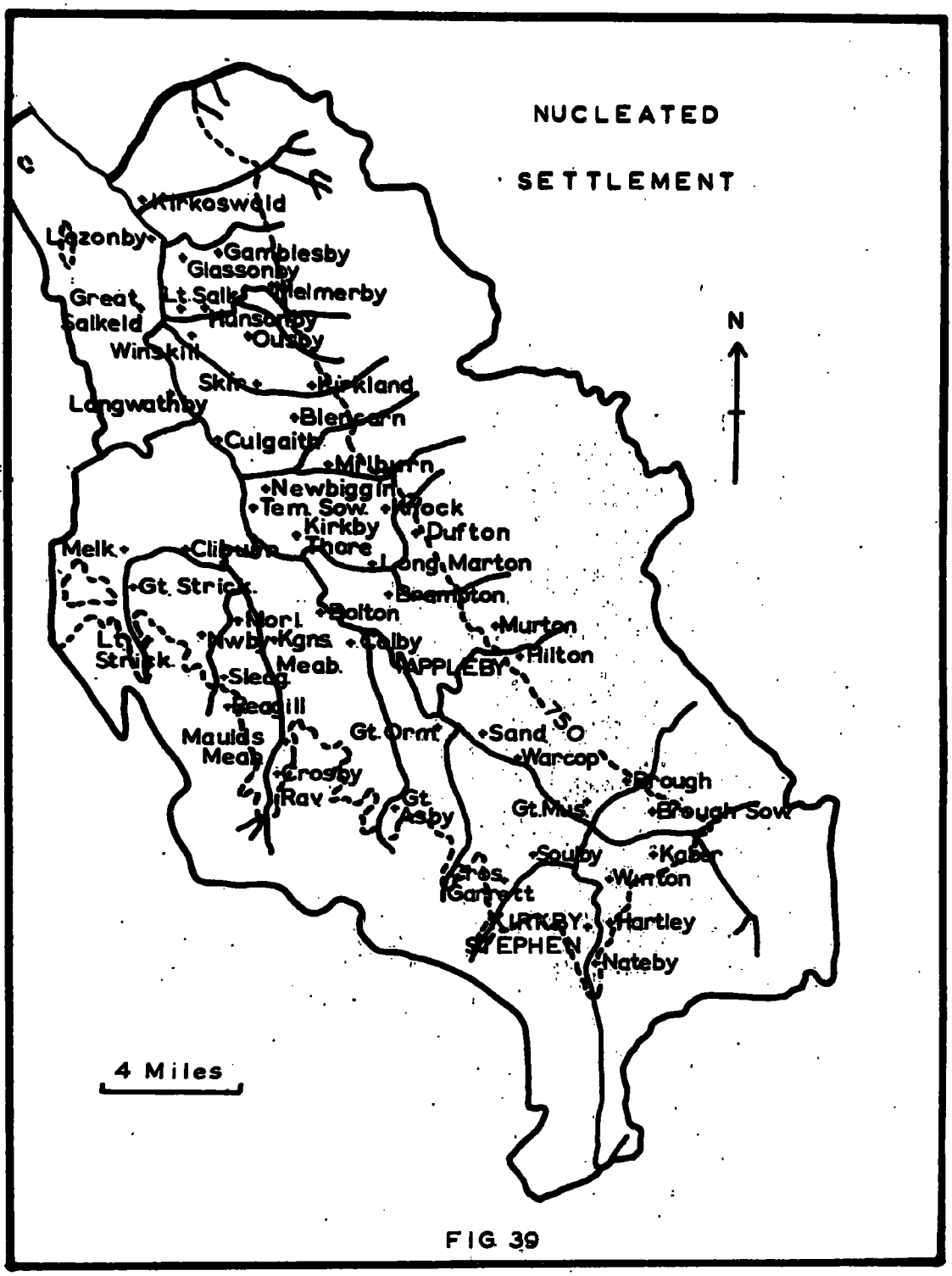

NUCLEATED
SETTLEMENT
N
Kirkoswald
Lazonby
Gamblesby
Glassonby
Great Salkeld
Lt. Salkeld
Melmerby
Hansonby
Ousby
Winskill
Skirwith
Kirkland
Langwathby
Blencarn
Culgaith
Milburn
Newbiggin
Temple Sowerby
Flock
Kirkby Thore
Dufton
Melkinthorpe
Cliburn
Long Marton
Gt. Strickland
Brampton
Bolton
Murton
Lt. Strickland
Newby
Kgns.
Colby
Hilton
Meab.
APPLEBY
Sleagill
Maulds Meaburn
Gt. Ormt
Sandford
Warcop
Crosby Ravensworth
Brough
Gt. Musgrave
Brough Sowerby
Gt. Asby
Souby
Kaber
Cros. Garrett
Winton
KIRKBY STEPHEN
Hartley
Nateby
4 Miles

FIG 39

Nine villages have developed around village greens and thus can be termed Green Villages. Usually the green is roughly rectangular and the classic example is Milburn (6529). Except for three farms the whole village is built around the green which measures 270 by 110 yards. Many houses and farms are built onto the adjacent ones thus forming a solid wall especially on the northern and southern sides. The main reason for this remarkable morphology was the need for defence against marauding Scots.

Although the type of building material and morphology are significant aspects of the geography of settlement, perhaps the most pertinent aspect for the geographer is the functional structure of the villages.

To a great extent functions are related to altitude and position within the region. Altitudinally the villages range from 260 feet to 830 feet (Table 19). The largest group, fifteen villages, occurs between 600 feet and 700 feet.

It is convenient to consider nucleated settlement within the framework of the four physical regions. (Fig.40). In the following section each village has been classified according to its size and for each region detailed examples of large and small villages are discussed. The buildings in each village have been classified as farms, houses and others. (Tables 19 and 20). Houses and other structures built since

NUCLEATED SETTLEMENT

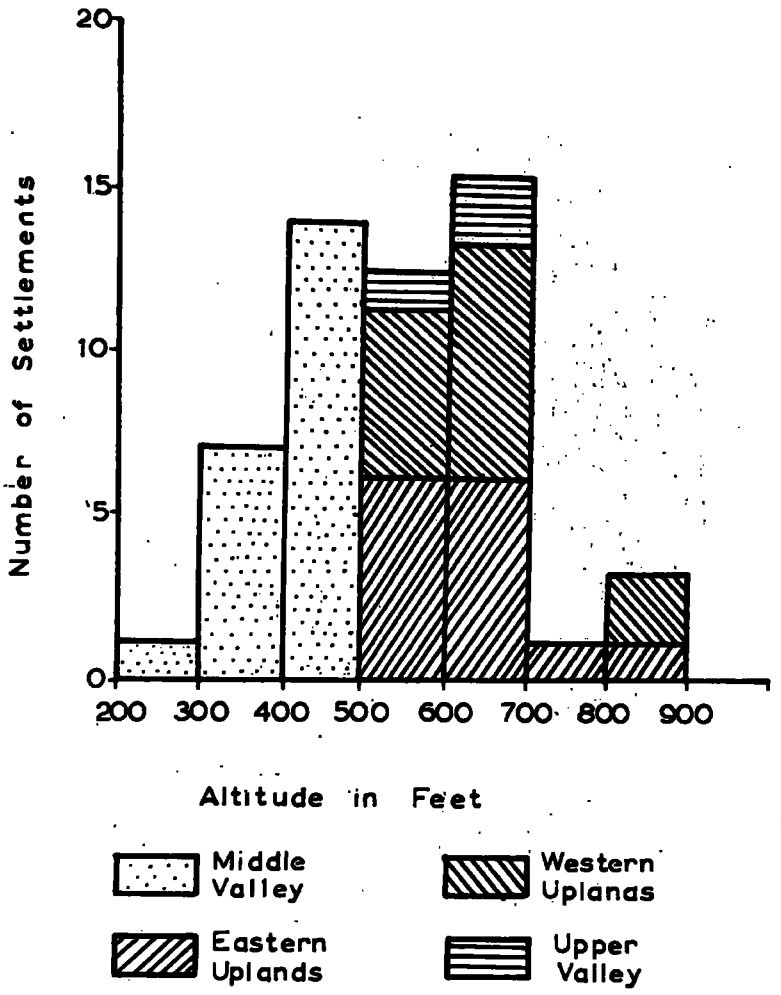


FIG. 40

1945 are classified as "New". The "Other" structures include for instance shops, assembly rooms and places of worship.

Upper Valley

The three villages in the region, Hartley, Nateby and Winton are all situated in the northern part of the region, close to the Middle Valley Lowlands. Nucleated settlement is not characteristic of the Upper Valley.

In Winton (7810), at 550 feet there are 52 structures (Fig.41) of which 66% are houses and 22% farms. Others include two Chapels, a school, public house, two shops and the local joiner's premises.

Hartley (7808) and Nateby (7706) are smaller villages. Hartley, at 600 feet, comprises 85% houses of which 5% are new (Fig.42). All other buildings are farms. Nateby at 650 feet comprises 80% houses and 12% farms but in contrast to Hartley there are here a school, public house and village shop (Fig.43).

Functionally, Winton, the largest village is the best developed. Winton is situated just east of the A685 from Brough to Kirkby Stephen, and where two minor roads converge to join the main road. Winton is also the lowest-lying village and occupies the most favoured position. Hartley is virtually a cul-de-sac for the road leads only to the limestone quarry,

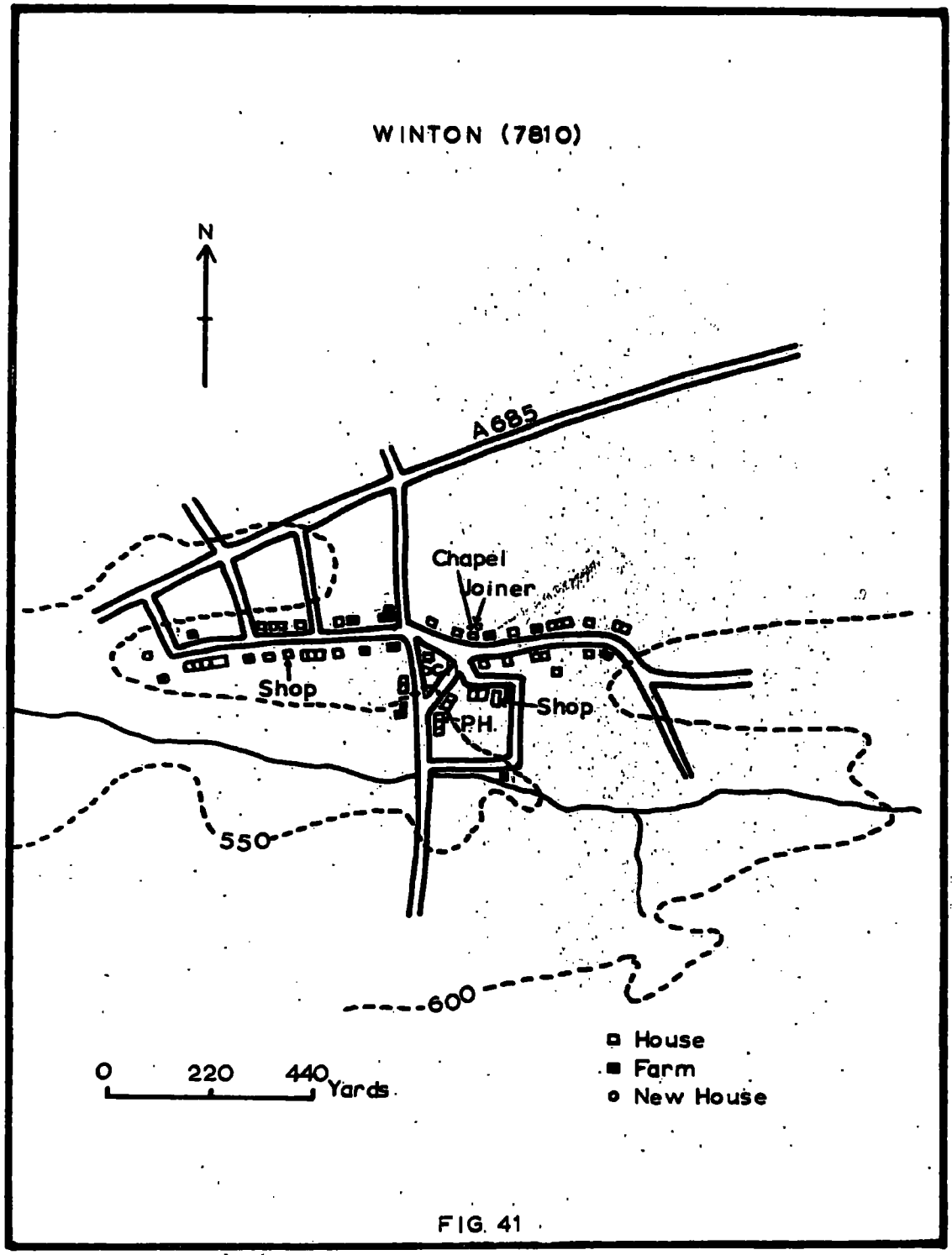
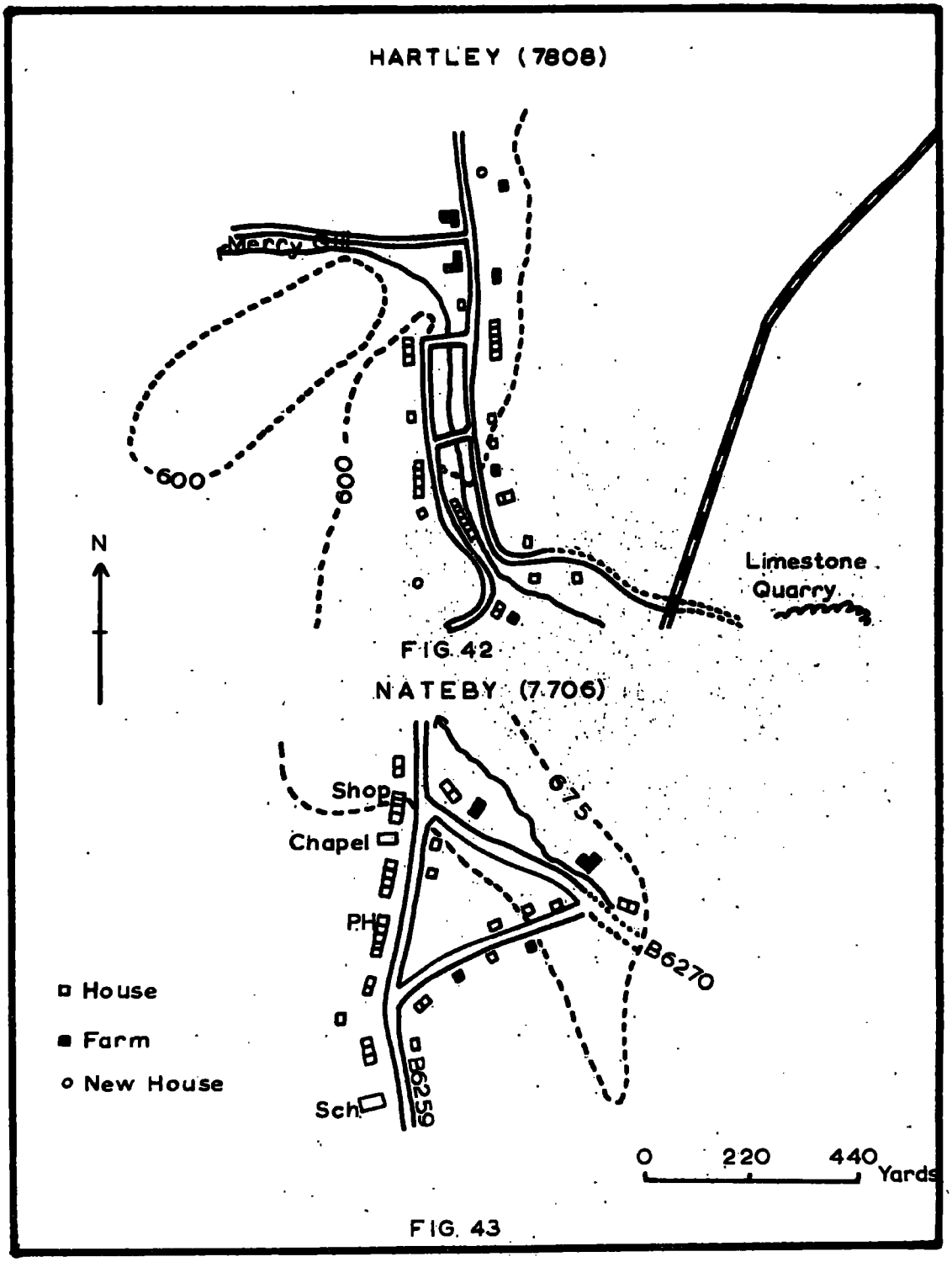

WINTON (7810)
N
A685
Chapel
Joiner
Shop
Shop
P.H.
550
600
0 220 440 Yards
House
Farm
New House

FIG. 41


HARTLEY (7808)
Merry Hill
600
600
N
Limestone Quarry
FIG. 42
NATEBY (7706)
Shop
Chapel
PH
675
B6270
B6259
Sch
House
Farm
New House
0 220 440 Yards
FIG. 43

and is only ½ mile from Kirkby Stephen. These two factors help to explain the functional immaturity of the village. One other result of Hartley's position are the new houses. Although a quiet retreat, Hartley is within easy reach of a town.

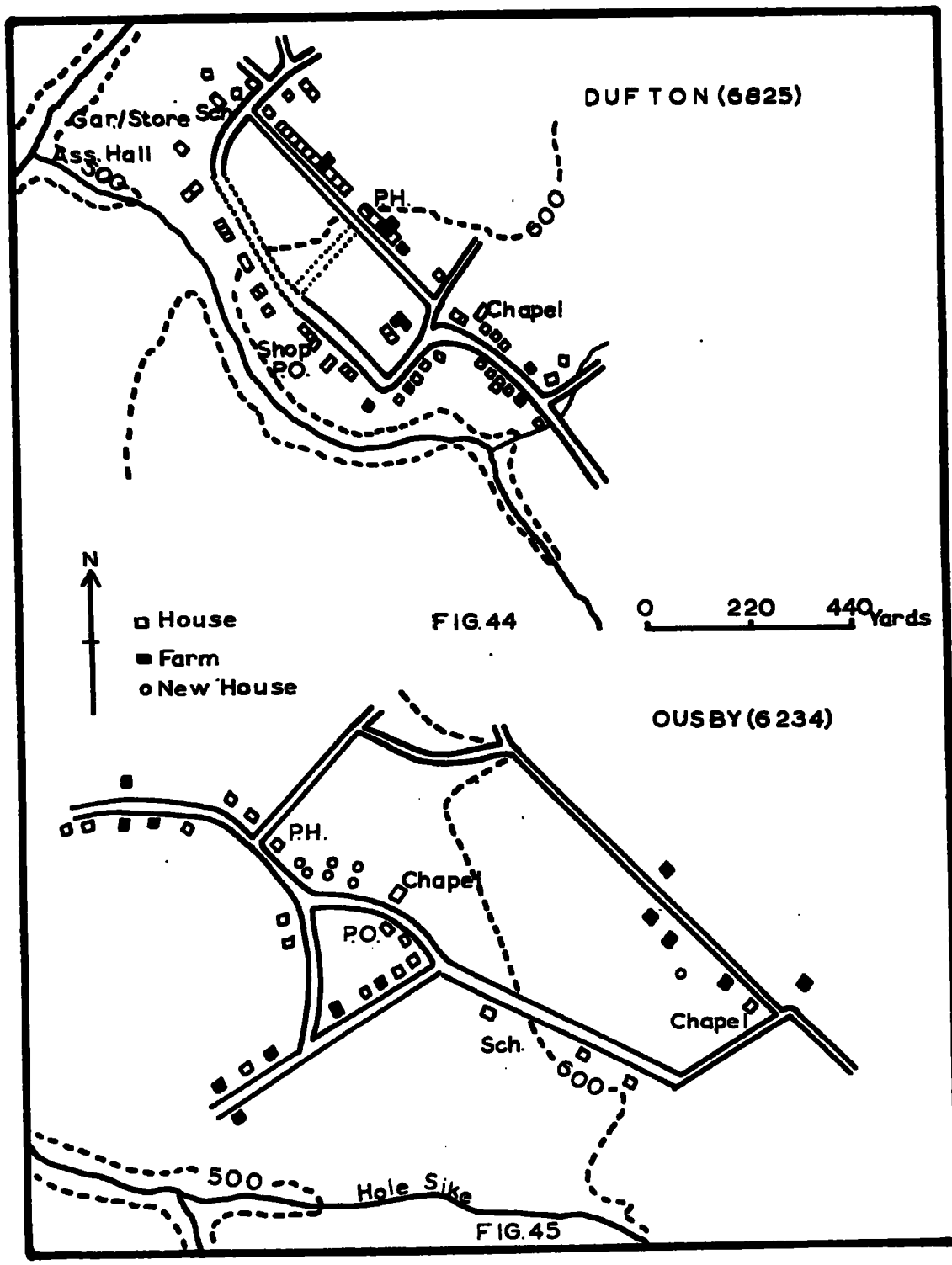
Nateby is better developed than Hartley even though it is smaller and at a greater altitude. Nateby has developed at the junction of the B6270 from Muker and the B6259 from Hawes. Secondly, being 1½ miles from Kirkby Stephen the settlement had to be more independent than Hartley.

Eastern Uplands

There are 14 villages in the region but only Dufton, having over 50 structures, can be classified as a large village.

In Dufton (6825) at 600 feet, houses comprise 78% and farms 11% (Fig.44). Other functions are well developed for there is a school, Chapel, assembly hall, two shops, Post Office, garage and public house.

Dufton developed on the Pennine foothills where the road along the fellside is joined by two roads from the lowlands. Dufton grew rapidly during the second half of the 19th Century. That period was the hey-day of lead mining in the Pennines and


DUFTON (6825)
Gar/Store
Ass. Hall
Sch.
500
P.H.
600
Chapel
Shop
P.O.
N
House
Farm
New House
FIG. 44
0
220
440 Yards
OUSBY (6234)
P.H.
Chapel
P.O.
Chapel
Sch.
600
500
Hole Sike
FIG. 45

and the London Lead Company was working the deposits in Great Rundale Valley. This Company installed the village's first piped water supply.

The other 13 villages have less than 50 structures and range in size from 12 at Kirkland to 46 at Ousby.

In Ousby (6134) at 550 feet houses make up 48% of the total (Fig.45). This is a low percentage for within the Eastern Uplands the range is from 44% in Gamblesby (6139) to 71% in Murton (7221). In Ousby new houses and farms are more important elements than in the Eastern Uplands in general. (Table 20). Other functions (10%) include three Institutional, Post Office and public house. Such a proportion is about average for the region.

In its situation Ousby is comparable to Dufton in that it developed where two roads from the Lowlands join the fellside road. The fellside road links together a line of villages, generally 1½ miles apart, strung along the foot of the Pennine scarp. Milburn (6529), Knock (6826) Murton (7221) and Hilton (7320) are the others. These six villages developed at the break-in-slope between the foothills and the scarp. In this position they could conveniently utilise the rough grazing on the fells and the lower arable land at the foot of the scarp.

Kirkland (6432) is the smallest village. Situated at 660 feet (Fig.46), houses here comprise 47% and the two new houses another 15%.

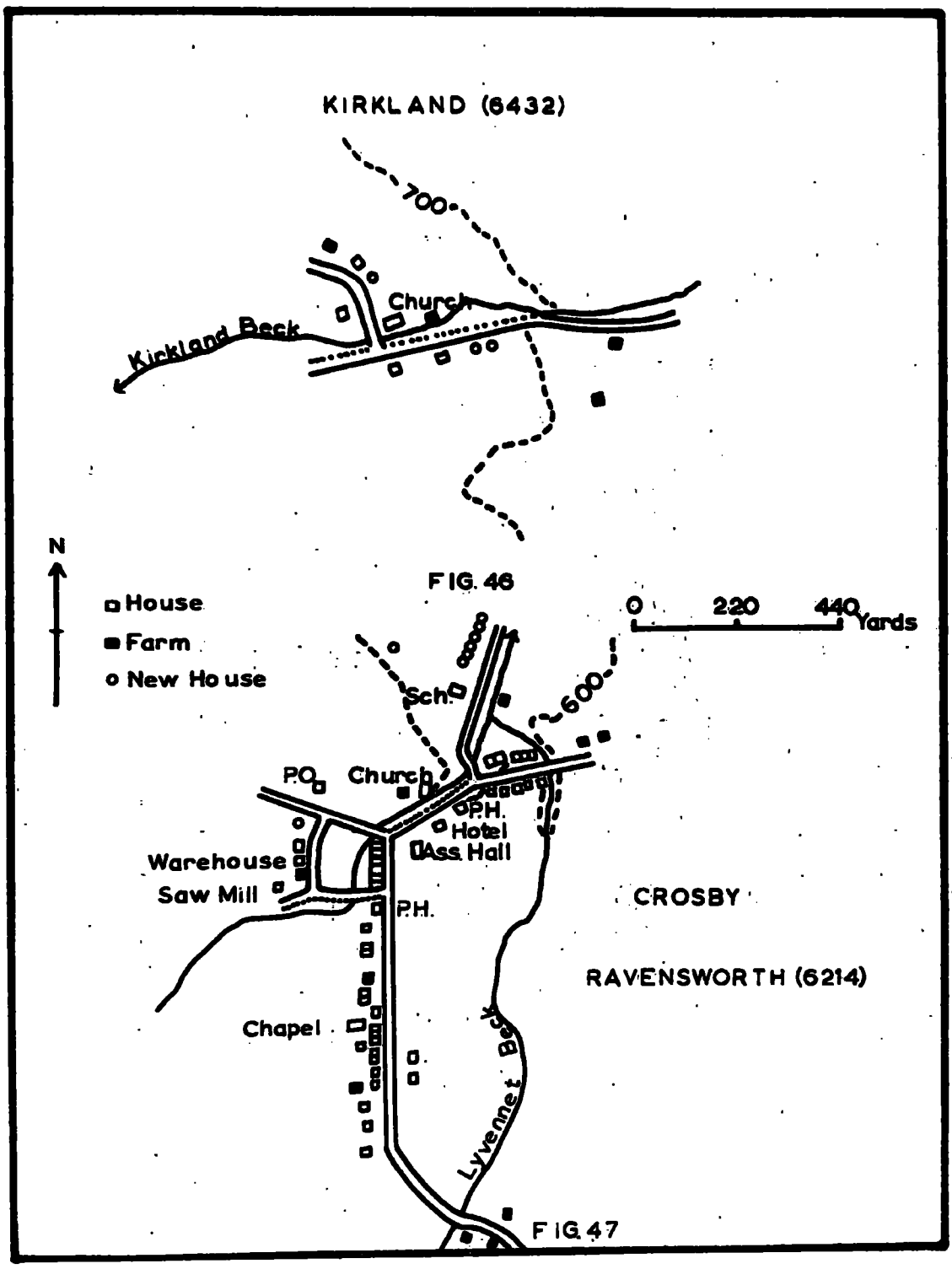
In two respects Kirkland is similar to Hartley in the Upper Valley. Both are mainly houses and farms. Secondly the road ends at Kirkland and beyond is Cross Fell. Perhaps the solitude and the low cost of land explain the new houses. The absence of other functions is a consequence of its small size and isolated position.

Western Uplands

As in the Eastern Uplands here also there are 14 villages, but two of these have over 50 structures. Crosby Ravensworth at 610 feet is made up of 68 buildings and Great Asby, at 600 feet has 61.

In Crosby Ravensworth (6214) (Fig.47) houses comprise 64% and in Great Asby (6813) (Fig.48) 63%. One contrasting element is that in Crosby Ravensworth, another 10% are new houses whereas the figure for Asby is 1%.

Asby is however a more important farming village (23%) as compared with 13% in Crosby Ravensworth. In other respects the two villages are very similar. Both have a Chapel, Church, School, assembly hall, Post Office, shop and public house. In addition Crosby Ravensworth has a hotel, local builder and saw mill.


KIRKLAND (6432)
700
Church
Kirkland Beck
N
House
Farm
New House
FIG. 46
0
220
440
Yards
Sch.
600
P.O.
Church
P.H.
Hotel
Ass. Hall
Warehouse
Saw Mill
P.H.
CROSBY
RAVENSWORTH (6214)
Chapel
Lyvennet Beck
FIG. 47

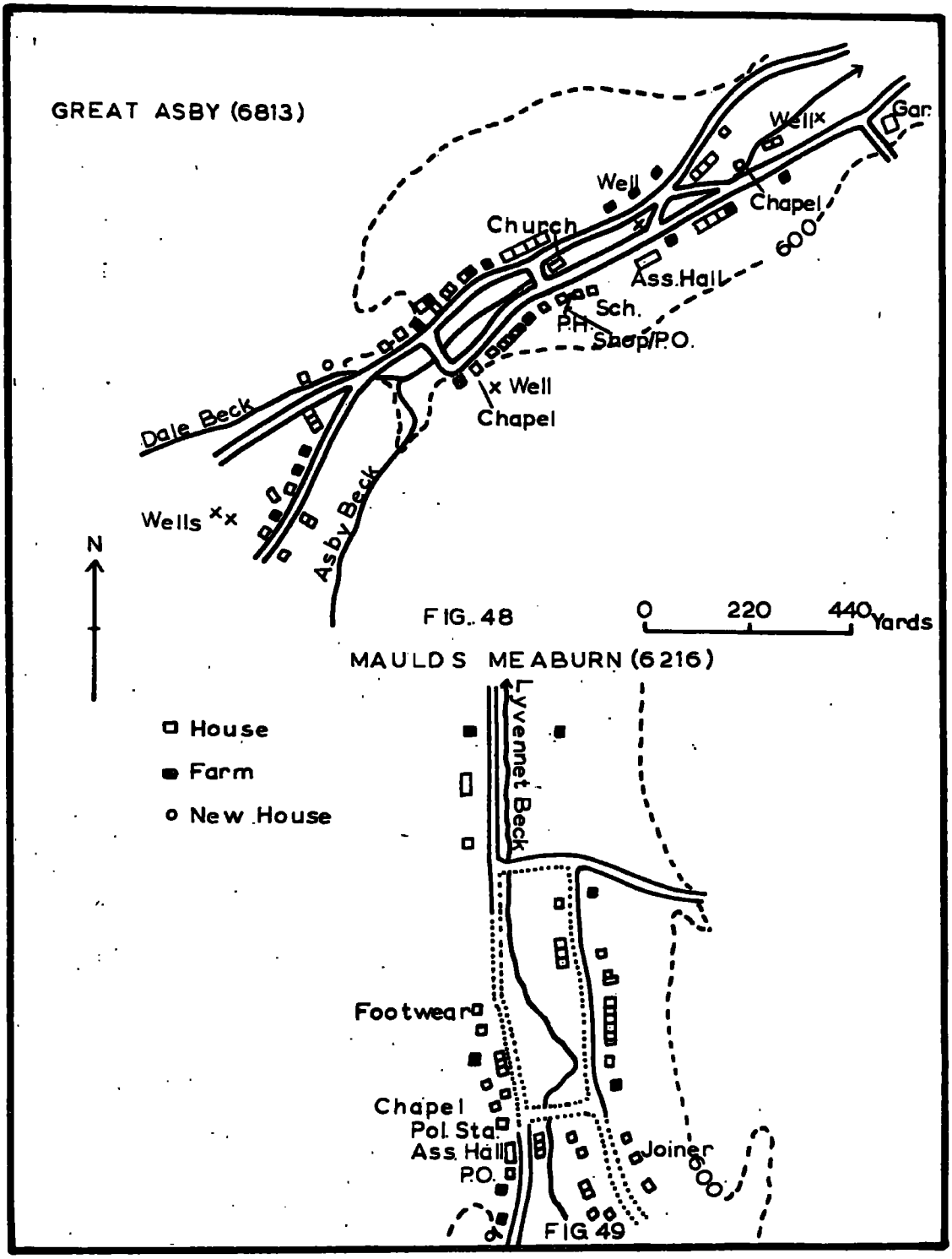

GREAT ASBY (6813)
Well x
Gar
Well
Chapel
Church
600
Ass. Hall
Sch.
P.H.
Shop/P.O.
x Well
Chapel
Dale Beck
Wells x x
Asby Beck
N
0 220 440 Yards
House
Farm
New House
MAULDS MEABURN (6216)
Lyvennet Beck
Footwear
Chapel
Pol. Sta.
Ass. Hall
P.O.
Joiner
600
FIG 49

FIG. 48

Crosby Ravensworth developed at the junction of the road from Shap with the road through the Lyvennet valley. In contrast Asby is situated in the upper valley of Hoff Beck and until 1960 was without a through road. Fell tracks led from the village to the B6260. In 1960 one of these was surfaced but it is very narrow and this together with a winding steep hill makes it of limited value. The difference in accessibility seems to explain the important contrasts between the two villages. Asby has more farms. Crosby Ravensworth has more new houses and a hotel.

The twelve villages with under 50 buildings range in size from Waitby 6, to Maulds Meaburn, 45.

Maulds Meaburn (6216) situated at 550 feet comprises 72% houses (Fig.49). This is the highest proportion in the Western Uplands. The proportion of new houses (2%) is about average for this area but farms comprising 13% are the lowest percentage in the area. Another interesting feature is that the other functions are also poorly developed. Although the village boasts one of the few remaining cobblers there is no other shop and no public house.

Maulds Meaburn is situated in the Lyvennet valley where four roads converge. Bearing in mind its size it is an unbalanced village. Its major function is that of a residential village, yet there is only one new house, and farms are

relatively unimportant.

In the Western Uplands Waitby is the smallest village. Situated at 650 feet Waitby (Fig.50) comprises four farms and two houses. There are no new houses but this is not uncommon for seven other villages are also without new houses. Waitby is a settlement in decay. Several farm outbuildings are now unused and others are in ruins. Three houses, inhabited within the last forty years, now stand empty.

The village is situated beside a small stream and south of the village is a well marked dry valley. A minor road follows the stream to the now disused railway station. From here a poor track continues to Crosby Garrett. In practice then Waitby has now only one outlet and this limited access seems to be the main reason for its decline.

Middle Valley Lowlands

In this region are 22 of the villages and thus numerically the Lowlands are outstanding. Also these villages in general are functionally more mature settlements. On the basis of size the villages must be considered in three groups. After analysing the villages having over 100 buildings the two other groups of 50 - 100 and under 50 structures will be discussed.

The five largest villages are Lazonby, Kirkby Thore, Langwathby, Temple Sowerby and Culgaith (Table 19). Lazonby

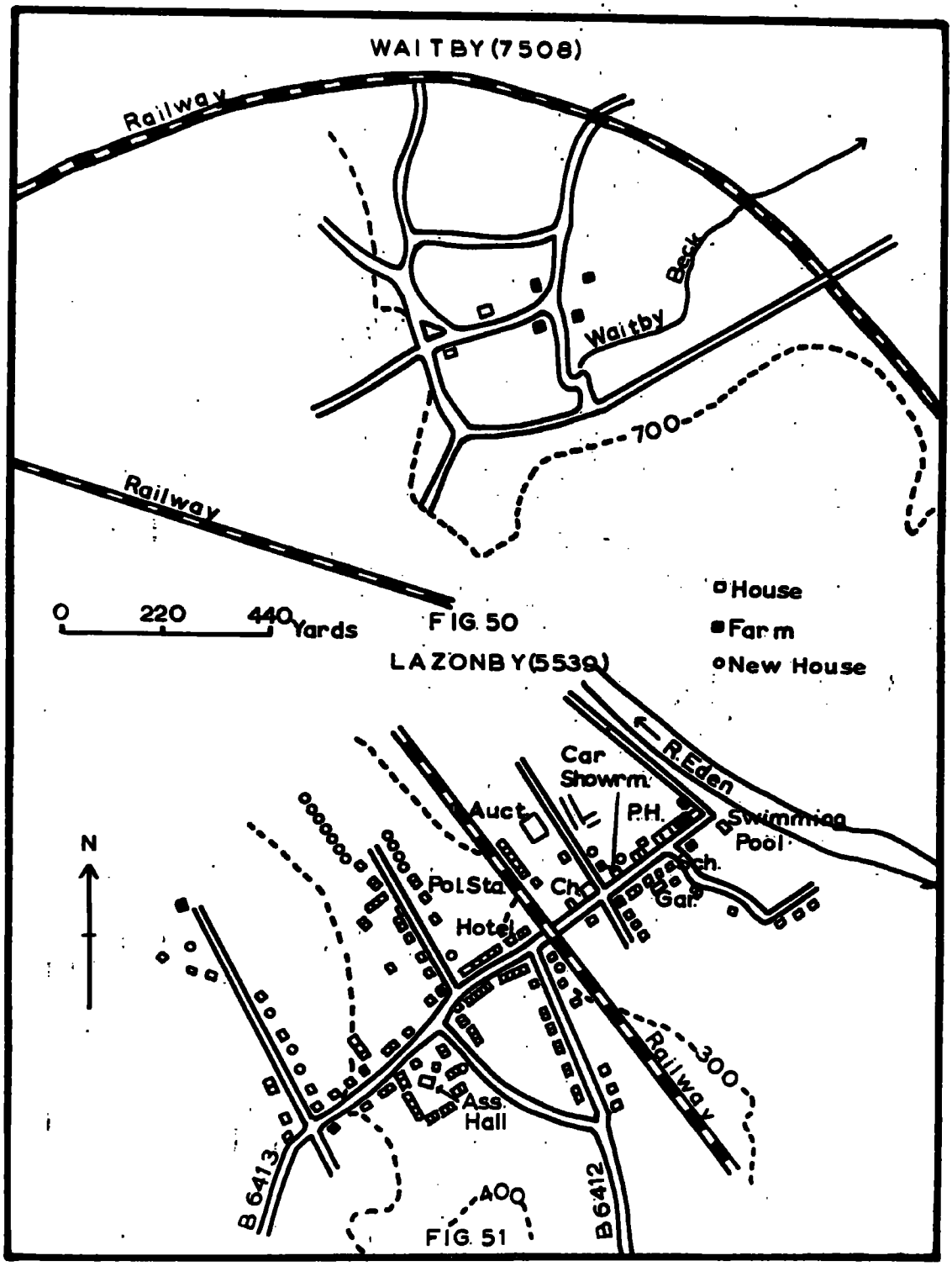

WAITBY (7508)
Railway
Waitby Beck
700
Railway
0 220 440 Yards
House
Farm
New House
LAZONBY (5539)
R. Eden
Car Showrm.
Auct.
P.H.
Swimming Pool
Ch.
Gar.
Pol. Sta.
Ch.
Hotel
N
Railway
300
Ass. Hall
B6413
B6412
400

FIG. 50

FIG. 51

and Culgaith may be considered in detail to illustrate the characteristics of this group.

Lazonby (5539) the largest village in the region is situated at 350 feet (Fig.51). Houses are the dominant element in all of these large villages and all have over 70% houses. In Lazonby the proportion is 75%. New houses in Lazonby comprise another 14%. A second distinctive feature of the group is the relative unimportance of farms. In Lazonby the figure is 3%. Other functions are well represented in the large villages and in Lazonby comprise 8%. In Lazonby additional to the normal range (Table 19) there is a ladies hairdresser, two banks and a garage with modern showrooms. Of special significance is the livestock auction. Lazonby is the main sheep auction in the northern part of the Eden Valley. Not surprisingly there is an important haulage business dealing mainly in livestock.

In every way then Lazonby is an outstanding settlement. Its importance is largely a consequence of its position. At 350 feet and just above the alluvial flats it is adjacent to a highly productive farming region. The village developed at the junction where two "B" roads are joined by two minor roads. (Fig.51). Rail links were an important asset. The line was constructed through the village on the lower slopes of the

sandstone uplands.

This ease of access seems to explain the high proportion of houses and new houses. Lazonby is essentially a residential village and a very attractive one. It is pleasing to the eye being built in warm red sandstone and the unspoilt beauty of the area is a second asset. The high proportion of services and amenities reflect the size and situation of Lazonby. Banks are found in only one other village. There is a low proportion of farms in Lazonby because farms are regularly dispersed in the surrounding district. This dispersion is the result of a high water table and consequently wells were relatively easy to construct. Secondly this is the most extensive area of gently sloping, low-lying and highly productive farm land in the whole region. Consequently farms of under 150 acres are here an economically efficient unit. To utilise the area to the full, dispersed farmsteads developed.

Culgaith (6129) at 490 feet is the smallest village in the group. Houses comprise 61% and new houses 21%. (Fig.52). In this latter respect Culgaith is quite outstanding. Most of these new houses were built by the Local Authority. Farms (9%) and other elements also 9%, complete the picture. This final category is higher than average, and includes a hotel and a caravan builder (Table 19).

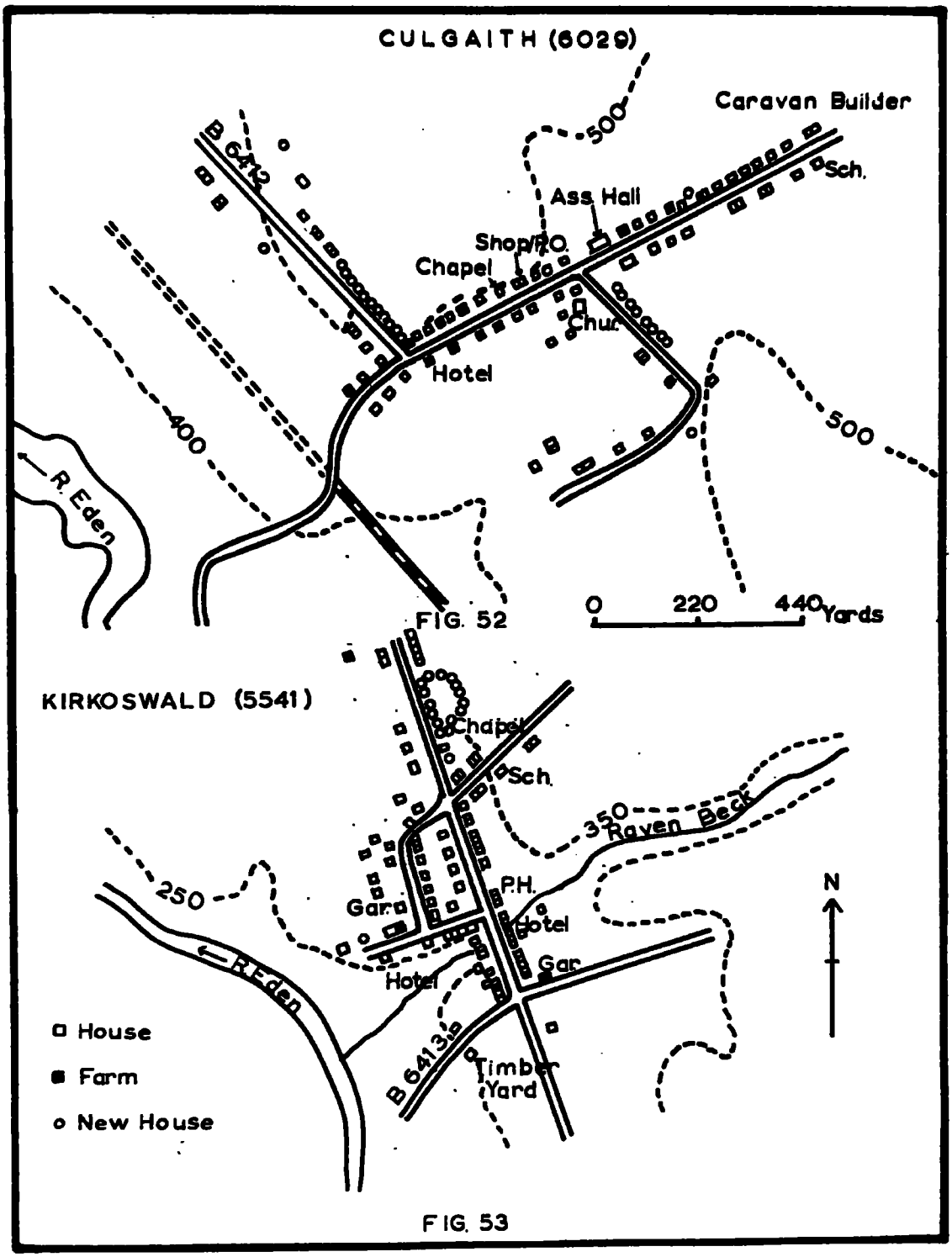

CULGAITH (6029)
Caravan Builder
500
B 6412
Ass. Hall
Sch.
Shop/P.O.
Chapel
Chur.
Hotel
400
500
R. Eden
0 220 440 Yards
FIG. 52
KIRKOSWALD (5541)
Chapel
Sch.
350
Raven Beck
250
P.H.
Gar.
Hotel
Gar.
Hotel
R. Eden
B 6413
Timber Yard
N
House
Farm
New House

FIG. 53

The situation of Culgaith is similar to Lazonby. Here the B6412 is joined by a minor road and the railway passes south of the village. Thus as in the case of Lazonby ease of access seems to be the major factor in its development.

The second group of villages in the Lowlands have between 50 and 100 buildings, and of these eight villages Kirkoswald is the largest and Cliburn the smallest.

Kirkoswald (5541) stands on the river bluff between 230 feet and 300 feet. (Fig.53). Houses make up 70% and new houses (15%) are particularly important. Farms (3%) are relatively unimportant. Other elements comprise 12%, about average for the group. More unusual elements are the Bank, bus office and a china shop.

Kirkoswald is popular with visitors mainly because of the delightful walks along the wooded Eden gorge to the north. Its popularity has been enhanced by its winning of Cumberland's Best Kept Village competition. The china shop, hotel and two public houses reflect this popularity.

Kirkoswald developed where three local roads join the B6413 and functionally the village is comparable to Lazonby.

Cliburn is the smallest village in the group (Fig.54). Houses are less important than in most villages and new houses comprise 12%. The main difference between Cliburn and Kirkoswald

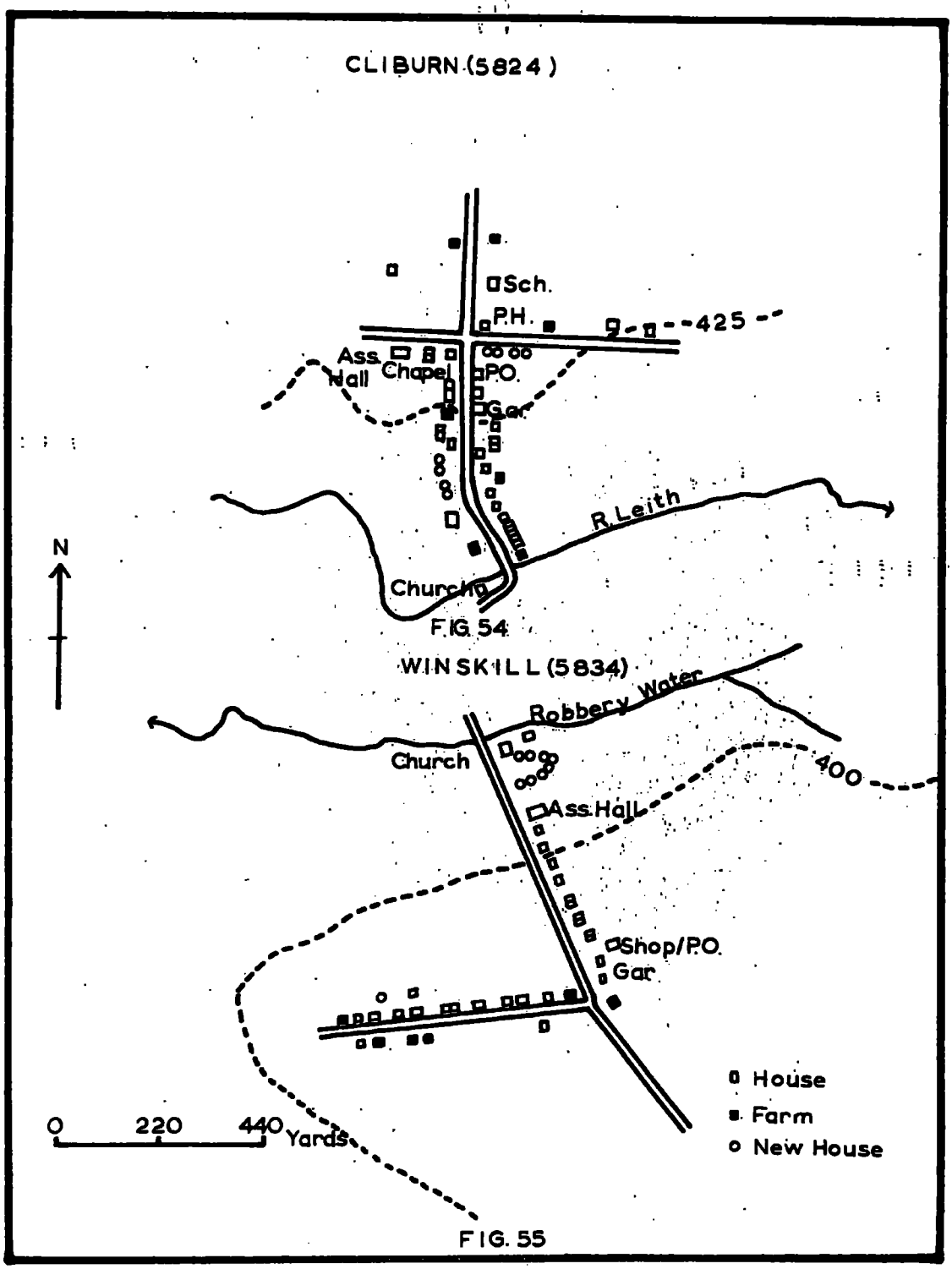

CLIBURN (5824)
Sch.
P.H.
425
Ass. Hall
Chapel
P.O.
Gar.
R. Leith
Church
N

FIG. 54

WINSKILL (5834)
Robbery Water
Church
400
Ass. Hall
Shop/P.O.
Gar.
House
Farm
New House
0
220
440
Yards

FIG. 55

is that Cliburn's farms represent 11%. Other functions are well developed. Cliburn growing up at a minor cross-roads can be described as a mature settlement.

In the third group of villages with under 50 buildings, there are nine villages. All of these villages except Little Salkeld (5636) are at or above 400 feet.

Winskill (5734) at 400 feet is the largest village (Fig.55). Houses comprise 65%, about average for the group and new houses 17%. Both farms and other functions are below average. That Winskill is functionally immature is a reflection of its situation. The village developed along the two arms of a minor "Y"-shaped junction on an interfluve. Its origins are vague.

Hunsonby (5835) at 400 feet, is the smallest village. (Fig.56). Although houses constitute 69% there are no new houses. Farms make up 21% and other functions 10%. Thus the village remains as a residential and farming village and has no elements of new growth. The village has developed where two minor roads converge to cross a tributary of the Eden. Interestingly Winskill and Hunsonby are neighbouring settlements. Their geographically insignificant situation seems to explain their functional immaturity.

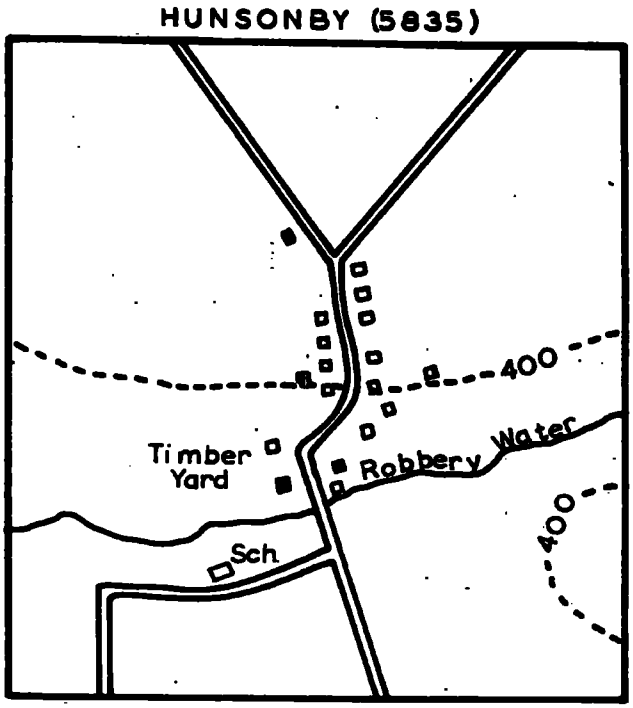
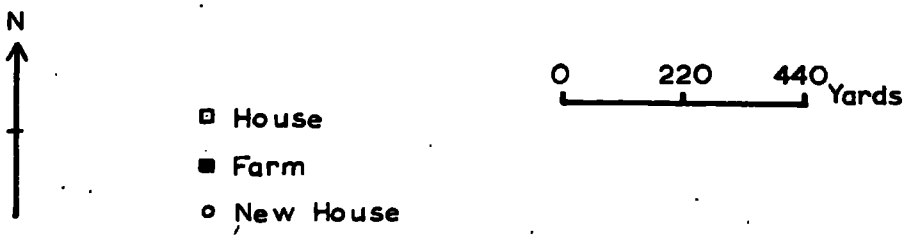

HUNSONBY (5835)
400
Timber Yard
Robbery Water
400
Sch

FIG. 56


N
0
220
440 Yards
House
Farm
New House

Because the villages in the Lowlands are so outstanding it is now appropriate to summarise their main characteristics (Table 20b).

In the upper and middle Eden valley villages there are some 1800 houses and of these over 1100 are in the Lowlands. In the region as a whole there are four villages in which houses represent 80% of the total structures. Hartley and Nateby, in the Upper Valley have already been discussed. Melkinthorpe and Kirkby Thore are situated in the Lowlands.

Melkinthorpe (5525) is a little unusual in that it was built to house the labour force for the Lowther Estates. Kirkby Thore is a more natural growth.

Kirkby Thore (6325) is a large village of 108 houses (Table 20a). It has an advantageous situation. Two minor roads here converge to join the A66 and a railway served the village until 1961. Secondly just east of the village the gypsum deposits have been developed.

New houses are also more a feature of the Lowlands than the other areas. Out of a total of over 230, 180 are located in the Lowland villages. Little Salkeld (5636) is outstanding in that new houses comprise 43%. These houses were built for the workers at the Long Meg anhydrite mine and the 24 new houses at Kirkby Thore were built for the gypsum workers by

the Local Authority. Some of Lazonby's new houses were also built for Long Meg workers but in addition Lazonby is a popular residential area.

Of the 19 villages without new houses, 14 are outside the Lowlands in the villages above the 500 foot contour. These villages are normally only served by minor roads, are less pleasant climatically and have fewer amenities.

As farming villages the Lowland villages are less outstanding than villages in the other areas. In the Lowlands, farms are more generally dispersed and are thus less important in the villages.

Food retailers, hotels (classified as catering) and public houses are all more numerous in the Lowlands. So also are the buildings used by the village, classified as institutional. In these four, except the last category, the Eastern Uplands rank second to the Lowlands. This reflects the more accessible nature of the Eastern as compared with the Western Uplands. Services, builders and joiners and garages are most numerous in the Lowlands but the Western Uplands rank second. These three examples emphasise the dominance of the Lowlands but also illustrate that the Western Uplands are more independent communities because they are less accessible than the Eastern Uplands.

Urban Settlement

Appleby, Kirkby Stephen and Brough can be classified as urban because in this region of isolated farms and villages, their functions are more comprehensive than those of other settlements.

Appleby

During the 10th Century the Danes established a settlement east of the River Eden. In the 12th Century the Norman Baron Meschines, built a chain of castles along the Eden Valley and Appleby was the most northerly one. This castle was built on one of the best possible sites (Fig.57). A knoll rising to over 500 feet closes the open side of the Eden meander and on this knoll Meschines built the castle. A civilian settlement then developed within the meander.

By the 12th Century Appleby was the main town in the Eden Valley and the Charter of 1298 made it an independent commune and the Burghers were thus freed of tolls throughout England. To this day the town retains the title of "the Royal and Ancient Borough of Appleby".

The defensive nature of the site explains the origin of Appleby but its position endows it with its present importance. Appleby is situated in the Eden Valley Lowlands, a productive farming region. Secondly the B6260 from Kendal here joins

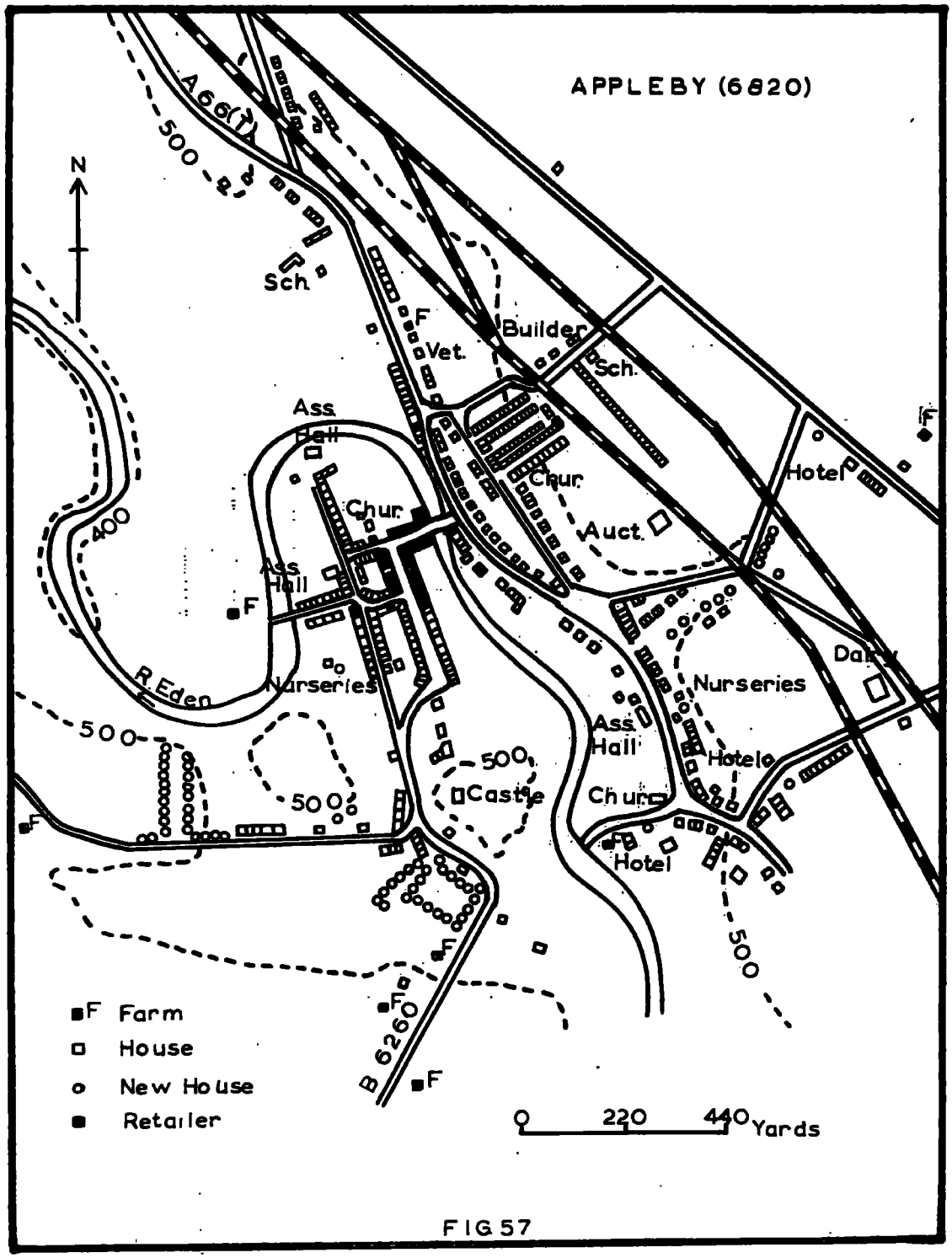

APPLEBY (6820)
A66(T)
N
500
Sch
F
Vet.
Builder
Sch.
Ass. Hall
Chur.
Auct.
Hotel
400
Ass. Hall
F
R. Eden
Nurseries
500
500
500
Castle
Nurseries
Ass. Hall
Hotel
Chur.
Hotel
500
F
F
F
B 6260
F Farm
House
New House
Retailer
0 220 440 Yards

FIG 57

the A66. Until 1961 two railways served the town, the Carlisle - Leeds - London line and the Penrith - Darlington line. The latter is now closed.

Appleby is no longer confined within the meander. In the late 19th Century houses were built on the steep slope between the A66 and the railway. Further building occurred between the two wars. Since 1945 most of the new building has been carried out on the southern and western fringes of the town. (Fig.57).

Old Appleby is within the meander. From the Castle to St. Lawrence's Church is the wide thoroughfare of Boroughgate - a plan typical of medieval European cities. The northern end of Boroughgate was the original market and here today the shops are tightly packed together.

Appleby's functions are those of a small town in the heart of a large agricultural region. There are over 600 buildings (Table 21) and 79% are houses (Table 22). In addition there are 22 uninhabited houses. These houses were condemned and many others will become so when vacated by the present occupiers. All these houses lack amenities even water.

New houses represent 6%, a smaller proportion than in 19 of the villages. In this low proportion of new houses the

Borough contrasts with most Boroughs in the country. Appleby has not experienced the great building boom of post-war years to the same degree as most towns. It seems as though Appleby's small population is its greatest weakness. The labour force is limited and this has discouraged the development of new industries.

Other functions in Appleby constitute 13% of the total and this is the category that clearly distinguishes Appleby from the villages. The main group are the 24 retailers. Food retailers number another 16 and the large range of services include Doctors, Solicitors and Accountants.

Catering establishments number 14. This group includes five large hotels. Appleby is a tourist centre in a limited way. Its position on the A66 is an asset and many people stay for an hour or two to break their journey. An increasing number come to stay for Appleby has many attractions. It is a small town with a long history and by modern standards it is very quiet. Fishing and pleasant river walks are at hand and for the more ambitious the Pennines are only 5 miles distant. In the future Appleby's appeal could well increase. Six of the eight garages are on the A66 because much more traffic by-passes the town than enters it.

In keeping with Appleby's function as a local market town there are two veterinary surgeons, an agricultural merchant and a thriving livestock auction. Sheep and lamb sales are the main business of the auction. In both autumn and spring sheep are sold continuously for three days at the main sales. Finally there is the Dairy. Since 1945 it has expanded rapidly and now the Company not only collect milk and eggs, they manufacture cheese.

Kirkby Stephen

Situated at the northern limits of the Upper Valley, Kirkby Stephen developed at the junction of the B6259 from Hawes and the A685 from Kendal to Brough. (Fig.58). Also the roads from Sedbergh and Muker converge here. Until 1961 when the Stainmore line closed, the town was served by two railways. It suffered a further blow in 1962 when the goods depot on the other line was closed. It had been the main depot in the Eden Valley.

Originally Kirkby Stephen was a small market town dominated by its large market square. It developed rapidly in the late 19th Century with the coming of the railways and the development of the goods depot. The town grew towards the railway stations in the south. Now it is a long straggling

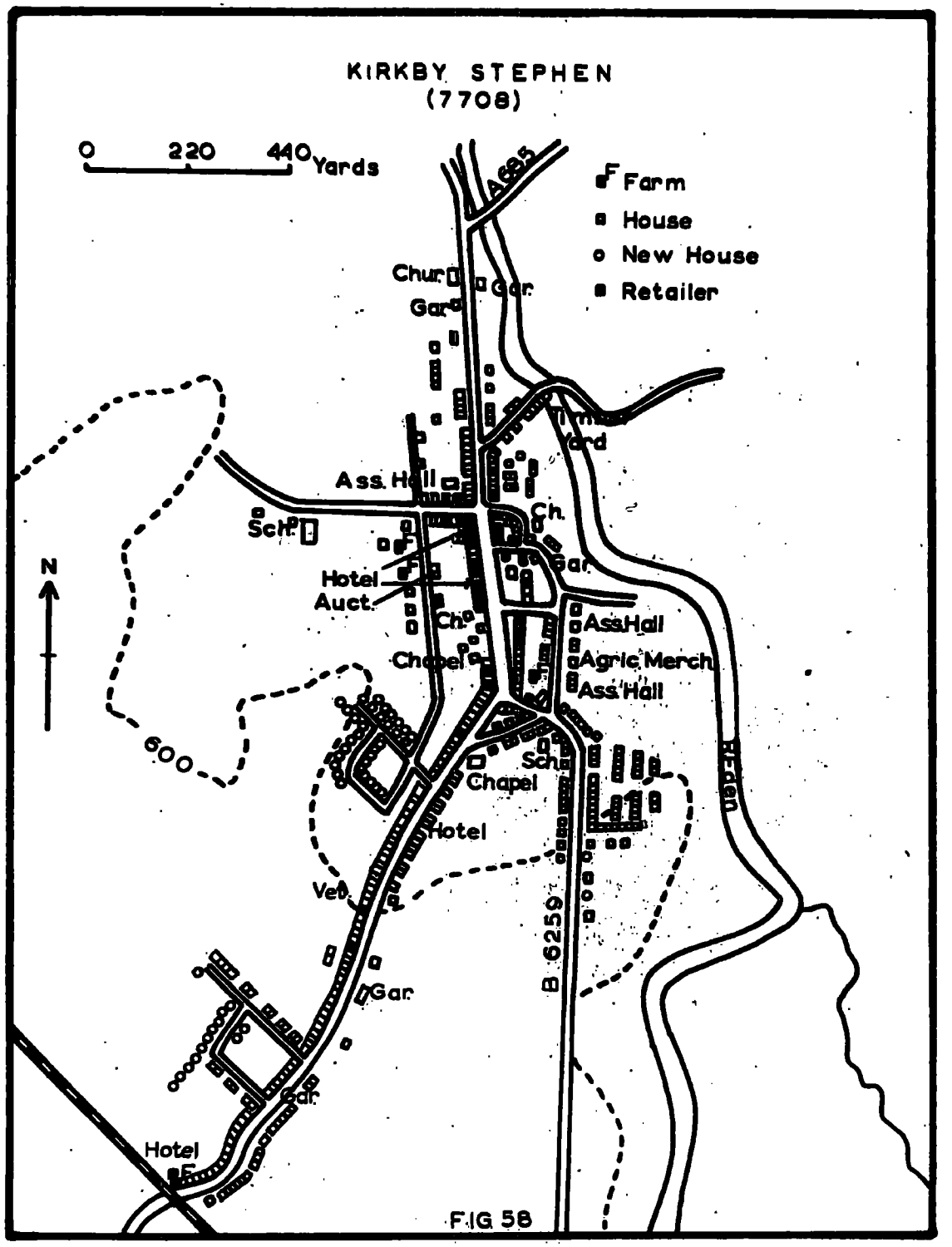

KIRKBY STEPHEN
(7708)
0 220 440 Yards
A685
F Farm
House
New House
Retailer
Chur
Gar
Gar
Ass. Hall
Sch.
Ch.
Gar
N
Hotel
Auct.
Ch.
Ass.Hall
Chapel
Agric.Merch
Ass.Hall
600
Sch.
Chapel
Hotel
Vet.
B 6259
Gar
Gar
Hotel
Eden

FIG 58

settlement and although not pleasing to the eye it fulfills an important role in the region. Indeed in many ways it is more important than Appleby.

Houses numbering 500 comprise 81% of the town's structures. Numerically and proportionally this is higher than Appleby. In contrast to Appleby there are only four uninhabited houses. This reflects the town's more recent growth. The 28 new houses, 5%, are proportionally less than in Appleby. Kirkby Stephen is in a less favourable position than Appleby because it is situated on the fringe of the best farming area whereas Appleby is in the centre. The Dairy gave new life to Appleby but just as Kirkby Stephen grew with the development of the railways, because the railways have now declined, the town's growth has been retarded.

Other functions represent 13% of the total, almost identical to Appleby. Retailers numbering 32 are in number and variety superior to Appleby. So are the food retailers. Numerically catering is more important in Kirkby Stephen but there is an important difference. The 15 examples include 9 cafes but in Appleby there are only three. These cafes have developed as a result of the day excursion coach traffic from North Eastern England to the Lancashire coastal resorts. In contrast to Appleby visitors rarely stay for a few days.

Garages numbering 5 and the one builder illustrate the inferior situation of Kirkby Stephen.

As in Appleby there is an important livestock auction and agricultural foodstuffs and equipment distributors.

Kirkby Stephen is a much better developed retailing and service centre than Appleby, and the more numerous institutional buildings suggest a more highly developed community spirit. Appleby's superiority derives from its more central position in the Eden Valley and its situation on an important route across North England.

Brough

Situated at 580 feet Brough has developed at an important junction. In pre-historic times Stainmore was part of the copper trade route between Ireland and Northern Europe. The Romans realising the value of the situation here built the fort Veterae. Today Brough is at the junction of the A66 and the B6276 from Teesdale. Morphologically Brough is a simple street settlement (Fig.59).

Smaller than Appleby and Kirkby Stephen, Brough has also different functions. Houses comprise only 70% but it has 31 new houses. Most of these were built for the workers in the limestone quarry. Other new houses have been built along the A685 on the edge of the town. Farms represent 2.3% and thus

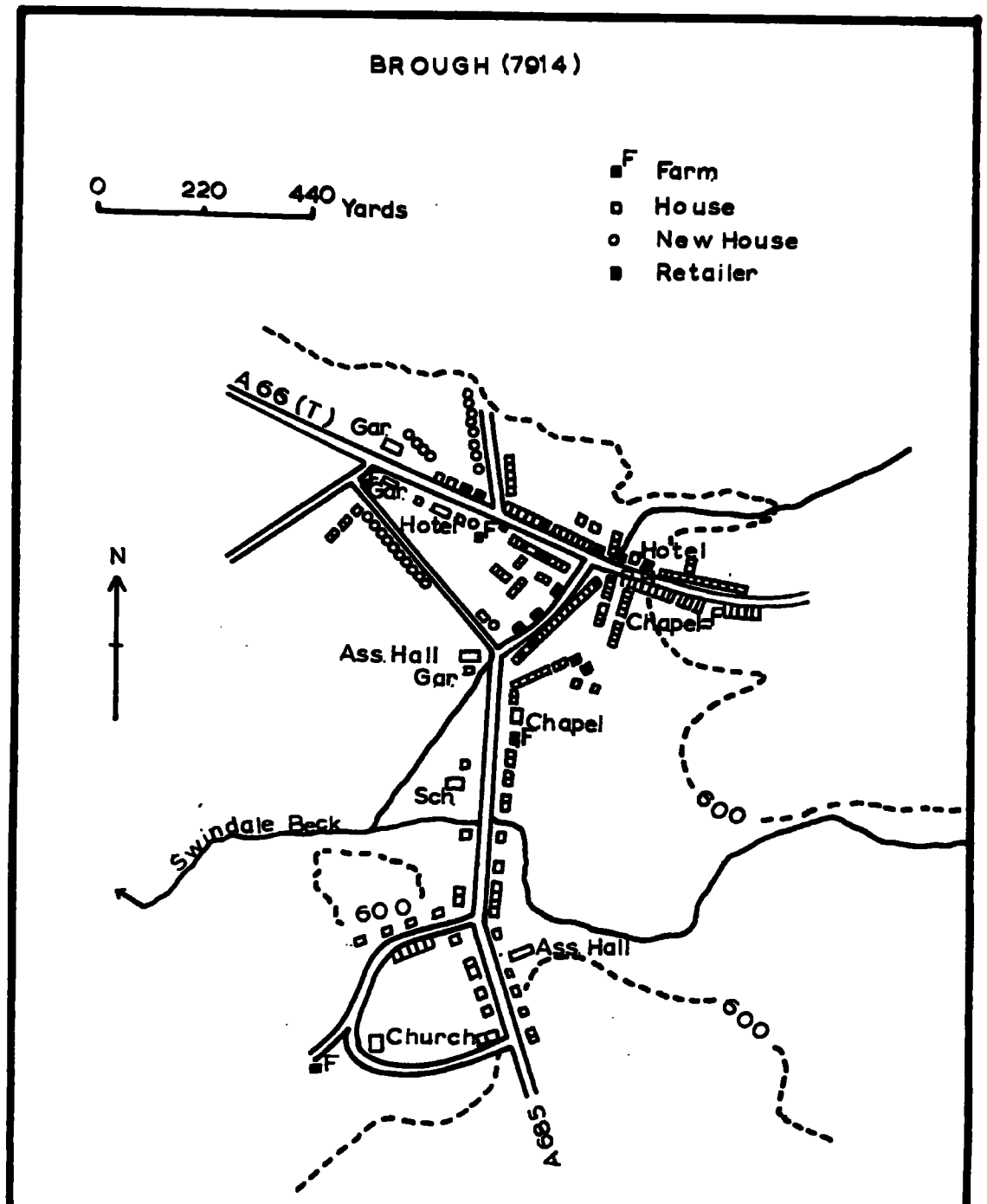

BROUGH (7914)
0 220 440 Yards
F Farm
House
New House
Retailer
N
A66 (T)
Gar.
Hotel
P.O.
F
Hotel
Chapel
Ass. Hall
Gar.
Chapel
F
Sch.
Swindale Beck
600
600
Ass. Hall
600
Church
F
A685

FIG. 59

Brough can be compared to the villages rather than the other urban centres.

However other buildings comprise 13% as in Appleby and Kirkby Stephen. Retailers are the largest group (Table 21) and include three drapers and a furniture shop. The livestock auction deals almost exclusively in sheep but is now less important than formerly.

Brough does have one very distinctive function in that it caters for the heavy traffic on the A66. There are two large hotels, one of which has its own petrol pumps. One of the three filling stations is particularly outstanding. It is situated on the western limits of the town and caters for heavy transport as well as the motorist. Every amenity including a social club is available and there are 23 petrol and diesel pumps. The restaurant is open 24 hours a day.

Originally Brough's main function was that of a small livestock market and then it grew as the limestone quarry developed. Now its dominant characteristics derive from its position on one of the busiest trunk roads in England.

Conclusion

In the Upper and Middle Eden Valley the gently sloping land below 500 feet is the most densely settled area. The largest number of villages and isolated settlements are in

the Lowlands. In this latter group farms comprise 58% of the total and farms are almost as important numerically, in the nucleated settlement pattern. The overall importance of agriculture is thus reflected in the settlement geography.

Houses and particularly new houses are most important in the villages in the Lowlands. These facts reflect the greater accessibility of the Lowlands and its more varied resource base.

Appleby and Kirkby Stephen are of only local importance as markets and shopping centres but in default of larger settlements they have become centres for social services and local administration. Brough although functionally more varied than the villages is less important than Appleby and Kirkby Stephen. Perhaps its inferiority is the result of its position on the fringe of the Lowlands and its lack of rail transport. Its importance as a road junction, at the foot of Stainmore, may assist the town's development in the future.

CHAPTER 7

COMMUNICATIONS AND TRANSPORT

Communications in the region are closely related to the relief because they have developed to meet the needs of an agricultural community. Below 750 feet roads are numerous but at higher altitudes are generally non-existent. Railways are even more confined to the lowlands.

Because the region is bordered by uplands, access to the area is limited. The Stainmore syncline is followed by the A66 and until its closure, by the Penrith to Darlington railway. The B6259 and the railway from London, via Settle to Carlisle follow the Upper Valley. In the west the A66 links up with the A6 by following the Eamont valley.

Railways

Railways are not now important in the region. The line from Darlington closed in 1961 and the Carlisle to Settle line is declining in significance, witness the large number of closed stations. Finally the once important goods depot at Kirkby Stephen closed in 1962.

According to the British Railway's survey passengers on the line number rather more than 10,000 per week. Few of these are local people. Local goods traffic is less important than in the pre-war years. For instance hill

sheep are now generally transported to the Solway marshes by road. Rail transport has a vital role in transporting the products of the Kirkby Thore gypsum works and of the Appleby Dairy. The railways do then provide a few specialised services but in the economy as a whole they are of little significance. In order to assess their importance the weekly figures for trains at Appleby have been analysed (Table 23).

General freight trains are the main group but only 12 out of 382 stop at Appleby. Parcel and milk trains are an important group but again most pass through. Fourteen stop and six terminate at Appleby. Milk is the most important single commodity transported from Appleby. It is taken to London in special tankers holding 3,000 gallons. In 1961 over 6,500,000 gallons were carried in this way.

Rather more than half of the passenger trains stop but they are used by only a handful of local people. There are so few passengers that the Beeching Plan proposed the withdrawal of all local stopping trains on the Carlisle to Settle line.

The railway is thus important only as a goods line. The region as a whole makes little use of the railways, witness the fact that 78% of the trains on the line do not stop at Appleby.

Roads

There is a good network of roads and with the decline of the railways roads play an increasingly important role (Fig.60). One problem is the cost of repairs and renewal. In the North Westmorland Rural District a penny rate produces only £593 and in the whole of Westmorland only £3479. Highways and Bridges are the second most expensive item in the County budget. For instance in 1962, excluding Government Grants, the total levied was 54s. 10·4d and Highways and Bridges cost 10s. 8·5d.

There are other problems associated with the road's characteristics. Most of them are under 14 feet wide and so large lorries and buses are limited. Steep gradients are another limitation. The valley flanks in the Western Uplands are notorious. In the Hoff, Helm and Lyvennet valleys 1:7 gradients are numerous. In winter snow and ice render such roads useless very quickly.

Above 750 feet the dry stone walls bounding the narrow roads cause rapid snow drifting. A snowfall of 1" in the Lowlands is of little consequence but on the uplands traffic can be immobilised very quickly.

In the following paragraphs an attempt has been made to assess the significance of road transport in the area today.

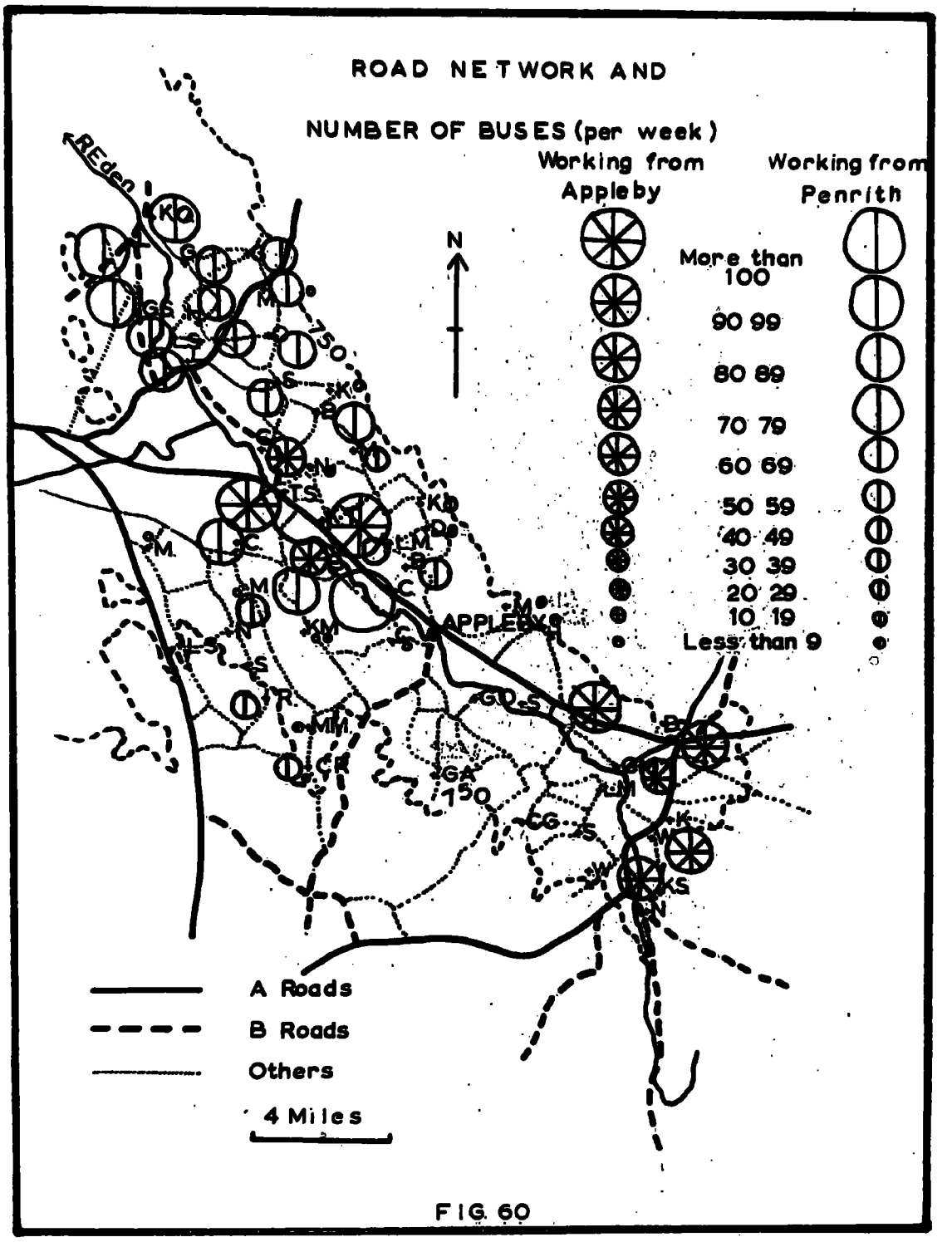

ROAD NETWORK AND
NUMBER OF BUSES (per week)
Working from Appleby
Working from Penrith
N
More than 100
90 99
80 89
70 79
60 69
50 59
40 49
30 39
20 29
10 19
Less than 9
REden
APPLEBY
A Roads
B Roads
Others
4 Miles

FIG 60

Four large haulage contractors operate from Appleby, Morland (6022), Hilton (7320) and Lazonby (5539). These firms transport the products of the mines and quarries and large numbers of livestock. In addition these producers run their own lorries. Notable examples are the gypsum works, the limestone quarries and the Appleby Dairy. Many farmers own a lorry to carry livestock to shows and sales.

Passenger traffic has some unusual features. The main bus company runs at a loss in rural areas such as the Eden Valley. In effect the town services subsidise the rural services. In order to reduce the losses most of the buses now operate without a conductor.

The timetable of the major bus company has been analysed (Table 23). Buses serving the area operate from Penrith and a few from Appleby. (Fig.60).

There are 53 villages in the area. Only 7 are well served by buses, in that they have over 80 buses per week. Fourteen villages have no bus service. These two groups have been studied in an attempt to ascertain the factors involved. The three most significant factors are altitude, the size of the village and proximity to "A" and "B" roads.

All the villages having over 80 buses per week are below 500 feet and with the exception of Crackenthorpe they have

over 70 dwellings. Every village is on either an "A" or "B" road. These villages are large enough to merit an average of 11 buses daily and are served by good roads.

The 14 villages without a bus service represent 26% of the villages in the region. With the exception of Sandford (7216), all are above 500 feet. Indeed eight are over 600 feet and one over 800 feet. Great Asby has 61 dwellings but the rest have under 50 and 7 have less than twenty. Nateby (7706) is on the B6270 but the others are served by minor roads.

It is interesting to find that three small bus companies still operate in the region. Usually in Cumberland and Westmorland the large Company took over the small operators. The three small operators supply services peculiar to this rural area. Their main job is the transportation of school children. Secondary education in the region has been re-organised on the Comprehensive system. Consequently children are being transported up to 14 miles to and from school. A second group requiring daily transport is the workers in the mines and quarries. Some of the firms supply transport but many workers travel on the hired buses.

Clearly these bus services cannot meet all the demands of this large rural area. Private transport is a necessity.

In each of the villages the number of garages has been noted and although this cannot correspond with the number of vehicles, at least a good impression is gained.

The number of cars in an area depends on the affluence of the people and the need for private transport. In the Upper and Middle Eden Valley an interesting relationship is discernible.

Consider the 7 villages having over 80 buses per week (Table 25). In five of these villages less than 45% of the dwellings have cars. In the two villages with more cars the proportion of farms is much higher. On examining the 15 villages without buses we find that in only three less than 45% of the dwellings have not a motor car and in five villages over 50% of the dwellings have a car. In the small villages of Waitby and Little Musgrave every dwelling has a motor car.

Thus the number of cars increases both with the number of farms in an area and with the decrease in public transport. These conclusions are supported by the Ministry of Transport survey.

In 1963 a comprehensive survey of transport is six selected rural areas was made. One of the areas was the district of Warcop, Musgrave and Sandford, in the Lowlands south of Appleby. In this area there are 913 people and

825 were interviewed to obtain details of journeys made and all other relevant information about travel habits.

In this area 46% of the households have a private car, well above the national average of 33%. In addition 12% of the households have light commercial vehicles or other form of motorized transport, and 68% of the households have at least one licence holder. Of the journeys made 67% are by private car, only 12% by public transport and a further 8% by contract buses.[1]

Road transport is now the most important form in the region. The problems of public transport are especially great in a thinly populated area much as the Eden Valley. As affluence, especially in this farming community, has increased, so has private transport for people and for goods.

1. "Cumberland and Westmorland Herald" 1964.

CHAPTER 8

POPULATION.

The demography of an area can be more readily understood if due recognition is given to conditions prevailing in the preceding period. Population trends since 1851 will be discussed before assessing the present situation.

Trends, 1851 - 1961

Because of changes in the size of many parishes and the disappearance of others detailed figures for every parish since 1851 are not available. Accurate figures, incorporating changes in boundaries, are available from 1921 onwards.

An assessment of population trends since 1851 is possible by using the population figures for the East Ward Rural District as a sample study.

The East Ward ceased to exist in 1932 when the North Westmorland Rural District was formed. The East Ward comprised 26 of the 50 parishes in the region under study and to this the Appleby figures have been added. (Table 26). Thus the totals for the East Ward and Appleby provide a fair sample of population changes since 1851.

In the area the most important point is the overall decline in population of 20.9% since 1851. Only one parish, Kirkby Thore, has more people in 1961 than in 1851. This

decline is largely the result of fundamental changes in farming. The main changes can be illustrated by reference to the returns of the Ministry of Agriculture for Westmorland. (Table 27).

A large decrease in the acreage of arable land is the most important change. Between 1866 and 1939 arable land decreased by 47%. Livestock and the production of grass became the main interests of most farmers. Thus temporary, permanent and rough grazing all increased in acreage. Cattle and sheep numbers rose by 55% and 114% respectively.

These changes meant a reduction in the numbers employed in farming. During the late 19th Century and up to 1939 arable farming required a larger labour force than livestock farming, because arable was the more intensive type of production. Then again most of the mechanical innovations before 1939 were mainly designed for arable farming. Thirdly after 1920 and particularly in the 1930's, agriculture was a depressed industry. Thus up to 1920 the farming industry could dispose of much of its labour force. Then again up to 1939 farming offered such poor wages and poor profits that people voluntarily left the rural areas.

During the Second World War more food had to be produced in this country. Between 1939 and 1943 the size of the male

labour force was reduced and 80,000 members of the Women's Land Army were substituted. Britain became the most highly mechanised farming country in the world[1] and total home output, as a percentage of total requirements, increased from 35% in 1939 to 55% in 1943. Imported animal feeding stuffs dropped to 1/10th the pre-war figure. There was a concentration on milk, and beef cattle, sheep and pigs were reduced in numbers. Farming emerged from the War a much more prosperous and efficient industry.

Farming has retained these characteristics but still the drift from the rural areas continues. It would seem that as farming has become more mechanised labour has become a less important factor. Many of the new methods now are designed to intensify livestock production. For instance the development of milking-parlours, the bulk milk collection service, deep-litter houses for poultry, pig farms and calf rearing. In all these developments labour is of less consequence than capital and often the ultimate effect is to reduce the demand for labour.

As the population has declined because of changes in farming, so also have the numbers employed in rural crafts, such as knitting and hand-loom weaving. Some of the services needed by the farming community have disappeared, for instance

1. Stamp L.D. "Man and the Land" p.238, 1955.

the blacksmith. Others have become more centralised in the towns, for instance the repair of farm machinery, and corn milling. Thus the numbers interdependent with farming and living in rural areas, have declined.

Although this overall decline is the main trend in the East Ward there were two periods when the population increased.

Between 1851 and 1861 the increase of 11% was followed by an increase of 18% between 1861 and 1871. These remarkable increases are related to the development of the railway system in the region. In the 19th Century a large army of workers was needed to construct railways and undoubtedly local services, providing materials and amenities were also stimulated. The line from Kirkby Stephen to Tebay was opened in 1861, and the Kirkby Stephen-to-Penrith line from Darlington, was constructed between 1858 and 1862. Finally the Carlisle - Kirkby Stephen - Settle line was completed between 1869 and 1876. Remarkable increases in parish totals are seen in the 1861-1871 period in Ormside, Crosby Garrett and Mallerstang. The decline in these parishes after 1871 is just as striking. It must be remembered that the East Ward as a whole was the area in which railway construction was concentrated.

The 1931-51 period was also a time when the population increased but this time by only 3%. This increase can be attributed to a widening of the labour market by the development of important non-agricultural activities, and the Second World War. In 1931 the Dairy opened its milk and egg collecting depot at Appleby. This provided additional employment in the area but it also stabilised farming and initiated the trend to increased milk production. Kirkby Thore gypsum works in 1938 began mining as opposed to quarrying. In 1939 the Silverband mine reopened to produce barytes. Between 1941 and 1945 the Wagon Repairs Company from Birmingham made Appleby their headquarters. Finally the development of the tank training ground on the slopes of Roman Fell brought a large influx of military personnel.

Having discussed the changes as revealed by the East Ward sample it is instructive to compare these with the trends in the region as a whole, since 1921 (Table 28). The main feature again is a declining population. The stimulus of industrial development and the Second World War are seen in the reduced decline of 0.6% between 1931 and 1951. Since 1951 the decline has accelerated. However within the region there are significant variations (Fig.61 and Table 29) and these merit close attention.

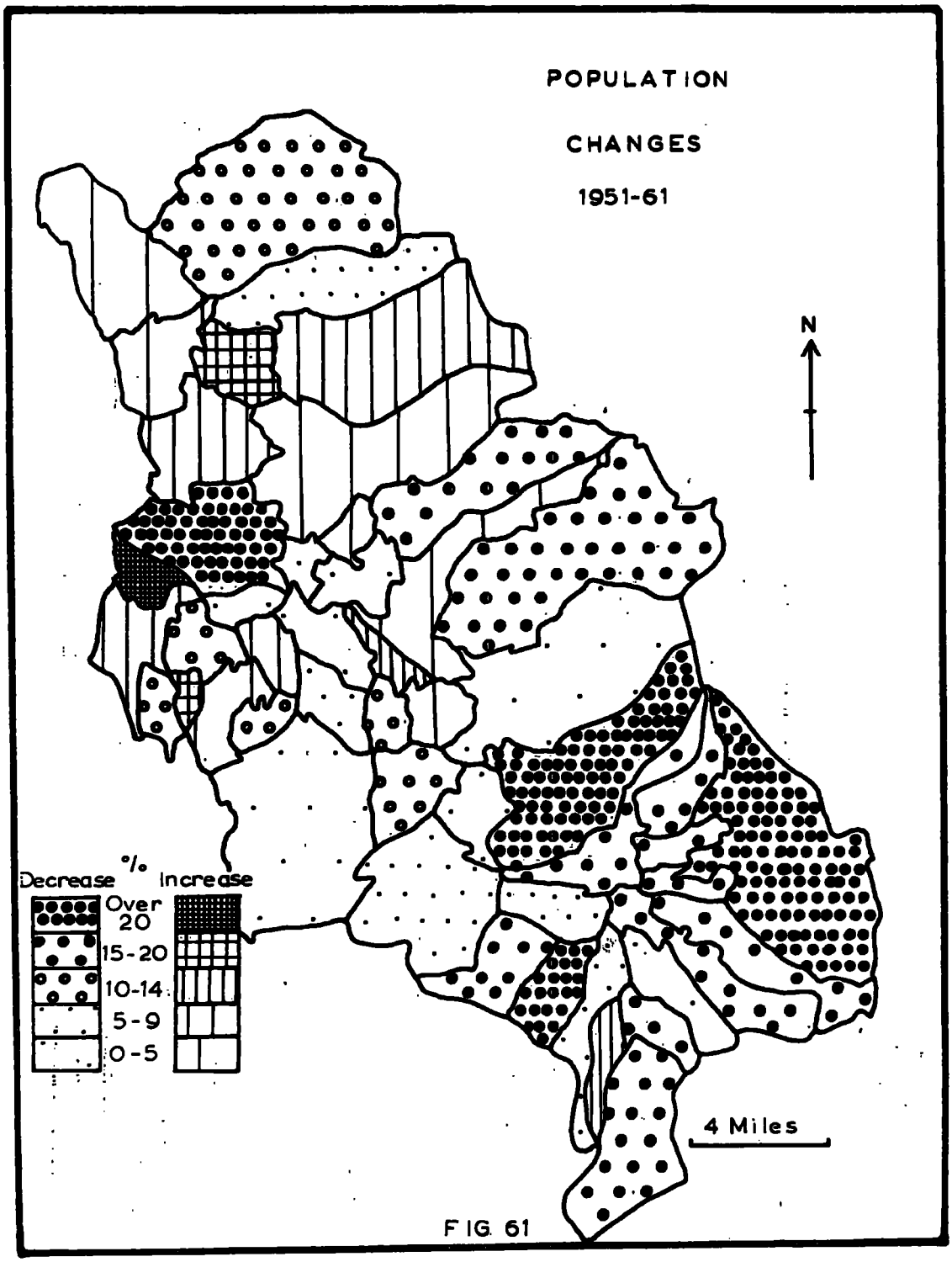

POPULATION
CHANGES
1951-61
N
Decrease
%
Increase
Over 20
15-20
10-14
5-9
0-5
4 Miles

FIG. 61

The areas having a significant increase in population are where non-agricultural industry has been stimulated or recently developed. Hunsonby is the area where the Long Meg anhydrite mines were developed and Langwathby parish has within its boundary the Edenhall brick and pre-cast concrete works. In other cases the northern part of the region is where increases have occurred because here are the most attractive yet easily accessible sites for private building schemes. This is seen in the parish increases in Clifton and Little Strickland.

Thus the overall result is that the north and north western part of the region is the developing area. Of the 17 parishes with an increased population since 1951 only Wharton is not in the north west. In any case the increase in Wharton of 14% is in fact equivalent to six people.

Compared with the 17 parishes showing an increase there are 33 with a decreased population. These parishes are in the area where agriculture is the major industry, where railway closures have been effected and include the Warcop Army camp, now with a reduced staff. It is interesting to note that limestone quarrying at Brough and Hartley and gypsum working at Kirkby Thore seems to have retarded the decline to under 5%.

It is fitting to conclude this section with the news that the Kirkby Thore plant is to be reorganised and extended. The British Plaster Company is investing £2,000,000 to extend the plaster mill and increase the output of plaster board. The scheme is described as one of the largest industrial developments ever to take place in North Westmorland.[1] More employment is being created in that 50 men above the present total of 130 will be fully employed in the new works. Again the effect will be to increase the population in the northern part of the Eden Valley.

Population Distribution

The total population of the region is 16,451 (Table 29) giving an average density of 41 per square mile. When considered in relation to England and Wales as a whole, with an average density of 750 per square mile, the Eden Valley is a sparsely populated area. This one fact reveals the real character of the area.

The distribution of population is closely related to altitude (Fig.62) and the 750 foot contour is the approximate upper limit. The deep valleys in the limestone dip slope in the south west are important fingers of settlement, flanked by sparsely populated moorlands.

1. "Cumberland and Westmorland Herald", July 24th, 1964.

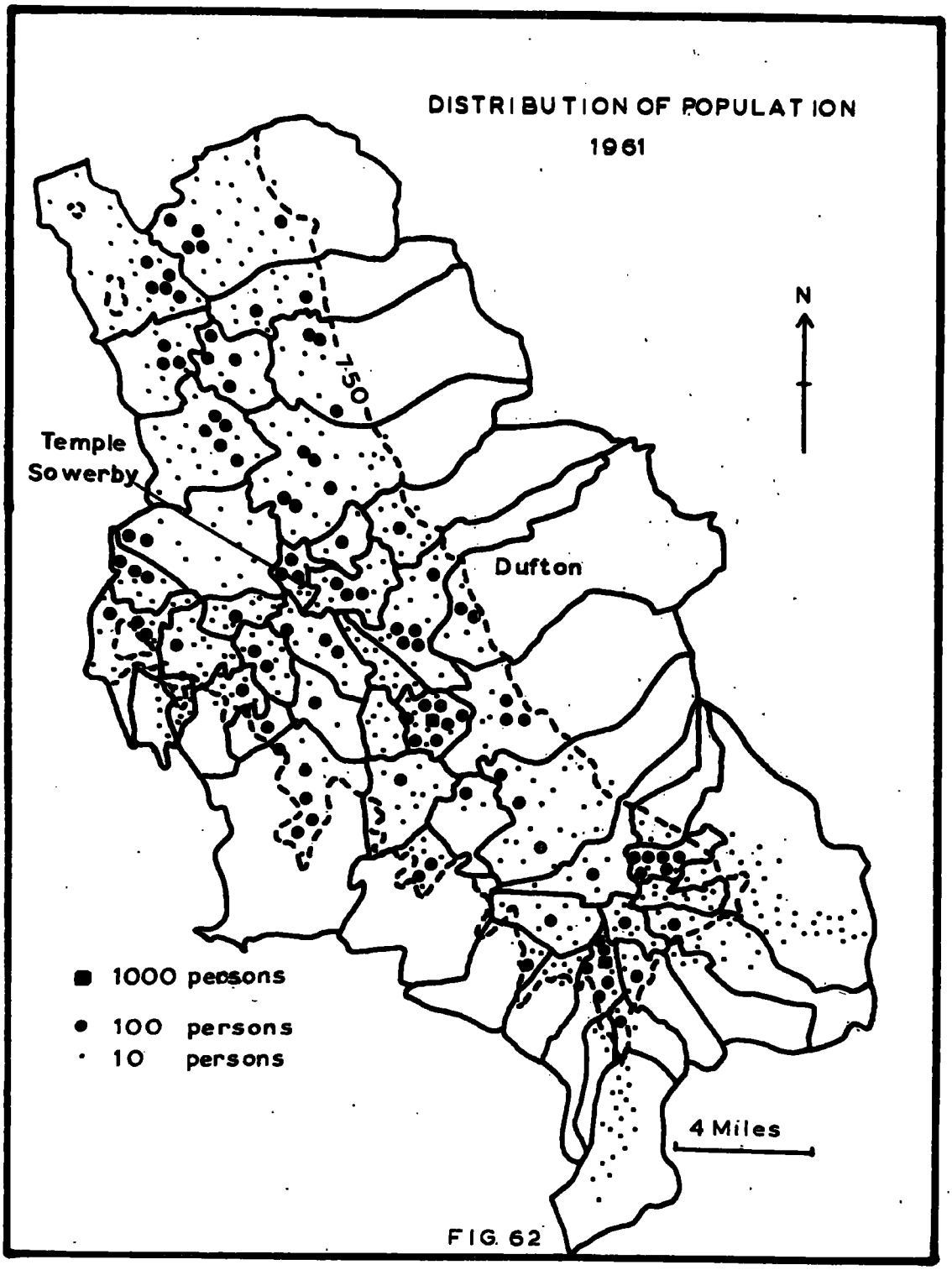

DISTRIBUTION OF POPULATION
1961
N
750
Temple
Sowerby
Dufton
1000 persons
100 persons
10 persons
4 Miles

FIG. 62

Below 750 feet the population is fairly evenly distributed between local clusters, and there are greater increases in population round the local market centres at Appleby, Kirkby Stephen and Brough. In the north west the 500 foot contour reveals the lower limit on the sandstone uplands. The main ridge is clothed in heather and bracken and the outlying upland, Whinfell is a large coniferous plantation.

The well populated areas are the best farming regions (below 750 feet), though there are a few isolated farms above this altitude. The importance of physical factors, and the contrast between the lower areas and the flanking uplands can be illustrated by comparing the parishes of Temple Sowerby and Dufton. (Fig.62). Temple Sowerby is a small compact parish entirely below 450 feet. It is situated in the gently sloping lowlands beside the R. Eden. The population is evenly distributed except in the vicinity of the river and the average density is 166 per square mile. In contrast, Dufton is 25 square miles in area and mainly above 1000 feet. The population is concentrated in the area below 750 feet but the average density is only 9 per square mile.

Population Structure

This topic is a vital one in a geographical assessment of any region. Figures for the whole region are not available but the figures for the North Westmorland Rural District are a good sample. This District includes all the region except the eight parishes in Cumberland and thus it includes 93% of the population.

Economically the most important feature (Fig.63) is the reduction in the numbers in the three age groups following the 10-14 group. (Table 30). This suggests that after the school leaving age of 15 years, a large proportion of young people leave the area. To be more certain of this point a comparison of numbers in the relevant age group in 1947 and 1961 has been attempted (Table 31).

Because of the way in which the information was published an exact comparison is not possible. Thus in 1961 the age group 14-18 corresponds with the 0 - 4 group in 1947, but in fact the 15-19 group is given in the census.

Nevertheless the point is made. Substantial numbers of the 15-39 age group are leaving the region. The opportunities for employment are insufficient to meet the needs of the area. Its resource base is too narrow.

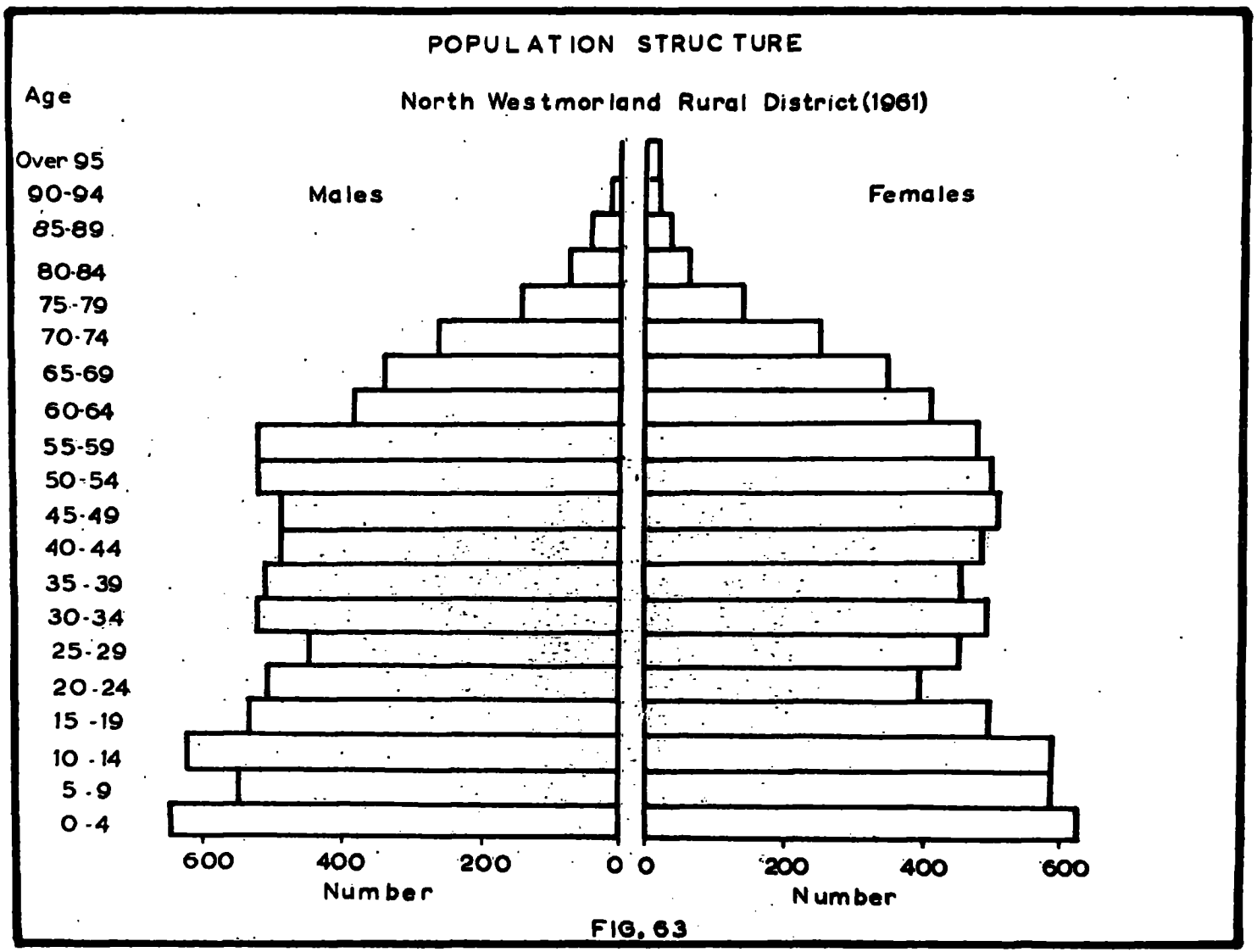

POPULATION STRUCTURE
North Westmorland Rural District (1961)
Age
Over 95
90-94
85-89
80-84
75-79
70-74
65-69
60-64
55-59
50-54
45-49
40-44
35-39
30-34
25-29
20-24
15-19
10-14
5-9
0-4
Males
Females
600
400
200
0
0
200
400
600
Number
Number

FIG. 63

The Outlook

The future is not a bright one because the main resource, the land, in the fullest sense, has well defined limits. Fundamental environmental controls, notably relief, climate and soil quality, are of outstanding importance.

Improved methods of cultivation are the ways in which farming will change and the demand for labour seems likely to decrease. Capital is now of greater importance than man-power in farming.

Non-agricultural activities such as mining and quarrying alleviate the situation but here again resources are limited. Only the gypsum and anhydrite deposits are still developing industries. There are prospects of the further development of service industries in the northern part of the region where new housing schemes are being developed. New houses are more numerous in the north and north west because Penrith is a flourishing town and is expanding to the west, south and south east. Also this part of the region is an attractive one for retired people in that it is a pleasant area and is accessible by the A6, A66 and main line railway.

The remaining and larger part of the Eden Valley now suffers from a lack of transport links. One railway line,

from Darlington has closed and the Carlisle - Settle line is scheduled to close for local trains. Bus services at best are sparse.

Thus the Eden Valley is typical of many rural areas in England today. The resource base is too narrow to support the population and the severance of transport links inhibits new developments. At the meeting of the County Council Planning Committee in 1964, it was stated that although the population of Westmorland is likely to increase by 1981, the depopulation of North Westmorland is likely to continue, and there is little hope of any increase in Appleby's population. It is estimated that the population of North Westmorland will decline by 6% (to 14250), in 1981.

There is however a new factor to be considered. The M6 motorway will pass through the western part of the region. The consequent improvement in communications may be sufficient to encourage new light industrial development. One great asset of the area is that for residential purposes it has many attractions and the cost of land for building houses and industrial premises is less than in most parts of England. In this sense, given improved transport facilities the region could be described as one awaiting development. In England distance from markets is now a less important factor in industrial location.

At the moment the region is losing people in the vital age groups 15 - 29. Although it has some assets the area, under present policies, seems likely to continue to lose people, because it remains too dependent on primary activities. Service industries cannot develop if the market does not expand and light industrial organisations are reluctant to come. If some incentives were offered to light industry the region could develop a stronger economy and the decline in population could be reduced.

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APPENDIX

TABLE 1

Numbers Economically Active (1961 Census Scale "D")

Age Groups	15 - 24		25 - 44		45 - 64		65 and over	
	Males	Females	Males	Females	Males	Females	Males	Females
PARISH								
Culgaith	6	2	7	1	12		2	
Glassonby	6	1	1	1	4	1	4	
Great Salkeld	1		6		1		1	
Hunsonby		1	5	3	7	1	2	
Kirkoswald	8	2	6	1	12	3		
Langwathby	2		8	1	9	2		
Lazonby	1	1	7	4	9	1		
Ousby	4	1	3		7	1		
Appleby	10	9	29	7	21	6	3	1
Asby	1		5	1	3			1
Bolton		1	6		2	1	1	1
Brough	3	4	7	5	9	3	1	
Brougham	1		5	2	5	1		
Brough Sowerby	1	1			2			
Cliburn	3		2		2			
Clifton	2	1	3		7	2		
Colby		1	1			1	1	
Crackenthorpe			1		2	1		
Crosby Garrett	2	1	2		1			
Crosby Ravens-worth	9	4	8		10	1		1
Dufton	1		6		5	1		
Great Strickland	2		2	3	2	3		1
Hartley			1		3			

TABLE 1 continued

Age Groups	15 - 24		25 - 44		45- 64		65 and over	
	Males	Females	Males	Females	Males	Females	Males	Females
PARISH								
Hillbeck		1	1					
Hoff	1	1	4	1	2			
Kaber	1		1	1	2			
Kings Meaburn	2	1	3		3	1	2	1
Kirkby Stephen	8	8	14	6	24	6	5	
Kirkby Thore	4	1	5		6		1	
Little Strickland			1		1			
Long Marton	6	1	10	3	6		1	
Lowther	4	1	8	1	5		1	
Mallerstang			3		1			
Milburn			3	1				
Morland			3	1	4	1		
Murton	1		8	2	5	1	1	
Musgrave	1	1	2		1			1
Nateby		1			3			
Newbiggin	1	1	2		2			
Newby	4		4				1	1
Ormside	1		1		1	1		
Sleagill			2	1	1		1	
Soulby	1		1		4			
Stainmore	2	2	7		4			1
Temple Sowerby	4		4	1	5	2	1	1
Waitby		1	2				1	
Warcop	4		5		13	1		1
Wharton	1							
Winton	1		1	2	1	2		
TOTAL	160		265		273		41	

TABLE 2

Numbers Employed according to the orders of Standard Industrial Classification (1961 Census Scale "D")

Classification	Out of Work		Agriculture		Mining		Production		Service		Defence	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
PARISH												
Culgaith			11		6		5		4	3	1	
Glassonby			14	2					1	1		
Great Salkeld			7						2			
Hunsonby		1	2		3		4		5	4		
Kirkoswald			17	2	1		3		5	4		
Langwathby			7		1		4		7	3		
Lazonby		1	4				2		11	5		
Ousby			12	2					2			
Appleby			9	2	1		13		40	21		
Asby			7	1			1		1	1		
Bolton			3		1				5	3		
Brough			5	2			3	2	11	8	1	
Brougham			8						3	3		
Brough Sowerby			1						2	1		
Cliburn			5				1		1			
Clifton			5				1		6	3		
Colby			1						1	2		
Crackenthorpe			2						1	1		
Crosby Garrett			1				2	1	2			
Crosby Ravensworth			24	1					3	5		
Dufton			6		3				2	1	1	
Great Strickland			3	3			2		1	4		
Hartley	1						2		1			
Hillbeck									1	1		
Hoff			3	1					4	1		
Kaber			3						1	1		

TABLE 2 continued

Classification	Out of Work		Agriculture		Mining		Production		Service		Defence	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Kings Meaburn			5	1			3		1	2	1	
Kirkby Stephen	1	1	8				10	3	30	16	2	
Kirkby Thore			9		5			1	2			
Little Strickland			1						1			
Long Marton	1		6	1	8		2		6	3		
Lowther			12				4	1	2	1		
Mallerstang			1				1		2			
Milburn			2		1					1		
Morland			1	1			2		4	1		
Marton			6	1			1		6	2	2	
Musgrave			3				1			2		
Nateby									3	1		
Newbiggin			5	1								
Newby			4						5	1		
Ormside			3							1		
Sleagill			4							1		
Soulby			4						2			
Stainmore			9	1					4	2		
Temple Sowerby		2	5		2		2		5	2		
Waitby			3							1		
Warcop			5	1			4		10	1	3	
Wharton									1			
Winton		1	3							3		
TOTAL	9		282		32		81		324		11	
%	1.2		38.1		4.3		10.9		43.8		1.5	

NOTE

In Tables 3 and 4 the statistics for Appleby, given by the Ministry of Agriculture and Fisheries, are misleading because, included with the Appleby statistics, are the returns for farms belonging to Appleby Castle Estate but situated outside Appleby.

The Estate has since been sold and it has not been possible to amend the statistics.

TABLE 3A

Agricultural Statistics 1960

(A) MAIN CEREAL CROPS (acres)

PARISH	Area	Wheat	Barley	Oats	Mixed Corn (for threshing)
Culgaith	12225	2	30¾	627¼	82
Glassonby	6972	4½	16	392¾	9½
Great Salkeld	3707	15¾	64	357¼	57¼
Hunsonby	2829	2	17	277¾	3
Kirkoswald	15672	-	151	794¼	47½
Langwathby	5517	32½	150	514	25
Lazonby	8378	14	94½	553¾	47½
Ousby	12828	15	45½	529¾	19¾
Appleby	1877	36	62½	501¾	19
Asby	8478	1½	-	160½	-
Bolton	2789	9	-	156	44
Brough	1572	-	3½	27½	-
Brougham	6727	21	262	511½	54
Brough Sowerby	1198	-	-	17½	-
Cliburn	1388	7	10	225	17¾
Clifton	1778	22	32	133½	33½
Colby	1400	2	-	51	7
Crackenthorpe	1358	-	4	29½	8¼
Crosby Garrett	3901	-	-	35	-
Crosby Ravensworth	14395	-	23	391¼	8
Dufton	16852	-	-	212¼	-
Great Strickland	2339	10	18	115	36
Hartley	3202	-	-	-	-
Hillbeck and Musgrave	7150	-	-	94½	19¾
Hoff	3661	2	-	16	-

TABLE 3A continued

PARISH	Area	Wheat	Barley	Oats	Mixed Corn (for threshing)
Kaber	4615	-	-	16	4
Kings Meaburn	2387	8½	-	65½	3½
Kirkby Stephen	3136	-	-	12¾	10
Kirkby Thore	2503	161½	85½	207¼	-
Little Strickland and Thrimby	2363	-	6½	146¾	18½
Long Marton	6946	½	-	202¾	25
Lowther	3675	35	73	189¾	-
Mallerstang	8371	-	-	-	-
Milburn	7955	39½	21¾	137½	-
Morland	1761	1	-	96½	-
Murton	13282	-	-	48¾	-
Nateby	2194	-	-	-	-
Newbiggin	1195	9¾	-	155	6½
Newby	2986	6¾	-	108¾	6½
Ormside	2718	-	-	165	9
Sleagill	1384	-	-	64½	11
Soulby	2644	1	-	83½	3
Stainmore	16328	-	-	-	-
Temple Sowerby	1240	3	6	83¾	37½
Waitby	2847	-	-	43	-
Warcop	11497	-	14	421½	41
Wharton	1500	-	-	1½	-
Winton	5110	-	6	30¾	5

TABLE 3B

Agricultural Statistics 1960

(B) POTATOES AND ROOTS (acres).

PARISH	Potatoes (first earlies)	Potatoes (main crop and second earlies)	Turnips & Swedes	Mangolds
Culgaith	9	89	275¼	31¾
Glassonby	2	40½	160½	13¾
Great Salkeld	7¼	62½	128¾	18½
Hunsonby	7½	24½	129½	13
Kirkoswald	4	78¼	370	19¼
Langwathby	2¼	126	221½	29
Lazonby	7¼	93	213	21
Ousby	13	96¾	229	17
Appleby	¼	52¾	171	6½
Asby	¼	6¼	44¼	-
Bolton	-	15	61¾	4½
Brough	2	8¾	7¼	1
Brougham	1	71½	188	22
Brough Sowerby	¼	1½	½	1½
Cliburn	-	27½	79½	6
Clifton	-	19	89	4½
Colby	½	6¼	13½	5½
Crackenthorpe	-	8	15½	½
Crosby Garrett	-	3¾	22	½
Crosby Ravensworth	-	17¾	130¼	3¼
Dufton	½	3	106¾	¾
Great Strickland	¼	6	54¼	11
Hartley	-	-	-	-
Hillbeck and Musgrave	-	5¾	47¼	4¼
Hoff	-	1¼	8½	3½

TABLE 3B Continued

PARISH	Potatoes (first earlies)	Potatoes (main crop and second earlies)	Turnips & Swedes	Mangolds
Kaber	-	¾	6½	1½
Kings Meaburn	-	3¼	22¼	2½
Kirkby Stephen	¼	2¼	7¼	½
Kirkby Thore	8½	79½	64	9¾
Little Strickland and Thrimby	-	3	49¼	-
Long Marton	-	32¼	95¼	8½
Lowther	-	23	57	9½
Mallerstang	-	-	¼	¼
Milburn	-	4¼	86½	3
Morland	-	6	24	2
Murton	¼	¾	16¾	-
Nateby	-	-	-	-
Newbiggin	-	8¾	47½	5¼
Newby	-	6¼	51½	5½
Ormside	½	3¼	54¾	1
Sleagill	-	3¾	23	8½
Soulby	-	4	31¼	3
Stainmore	-	1	-	-
Temple Sowerby	1½	13	43½	7½
Waitby	-	2	8	-
Warcop	1	20½	150¾	5
Wharton	-	-	1	-
Winton	¼	22½	18¼	2¼

TABLE 3C

Agricultural Statistics 1960

(C) GRASSLAND (acres)

PARISH	Temporary Grass		Permanent Grassland	
	For Mowing	For Grazing	For Mowing	For Grazing
Culgaith	1057¾	1276¼	518	2207¾
Glassonby	648¼	631½	115¾	912¾
Great Salkeld	565½	624¾	204¼	712½
Hunsonby	524¾	625	113½	559
Kirkoswald	1468½	2230¼	594½	2629½
Langwathby	851	1127	347¼	682¼
Lazonby	774½	1070½	83½	596¾
Ousby	1135¼	750¼	108¼	875¾
Appleby	1052¼	739¾	1081	2575¼
Asby	311¾	92	1421¼	3355½
Bolton	446	184½	384¼	1186¾
Brough	75¼	24	391½	634¼
Brougham	1028	1126	377	999½
Brough Sowerby	142	20½	370¾	536¼
Cliburn	361¾	274	83¼	589¾
Clifton	439½	344¼	177	546
Colby	157	140½	166½	367
Crackenthorpe	54½	34	160½	298½
Crosby Garrett	28	22½	454	683¼
Crosby Ravensworth	867¾	551¼	1556	4360¼
Dufton	385½	148½	454½	1075¾
Great Strickland	316½	96¾	265½	782¾
Hartley	-	-	289	859
Hillbeck and Musgrave	289	157	647½	1234¼

TABLE 3C Continued

Agricultural Statistics 1960

PARISH	Temporary Grass		Permanent Grassland	
	For Mowing	For Grazing	For Mowing	For Grazing
Hoff	24¼	20	190	146½
Kaber	85½	65	649¼	921¾
Kings Meaburn	168¾	108½	367	932
Kirkby Stephen	83	-	425¼	899½
Kirkby Thore	372½	384	301¼	941
Little Strickland and Thrimby	303½	134¼	292	756¼
Long Marton	532	331½	454½	1170
Lowther	623	405¾	212¾	2241
Mallerstang	-	-	733½	937½
Milburn	265	80	393½	893½
Morland	222	45	227½	748
Murton	106	2½	256	199
Nateby	-	31¼	304	347¼
Newbiggin	260	350½	72½	211
Newby	304½	242	405¼	1118
Ormside	299	114	484½	1353¼
Sleagill	109½	52	304½	755¾
Soulby	112	57½	563½	1052¼
Stainmore	118½	114½	1883¾	3318½
Temple Sowerby	121¼	78½	190	505¼
Waitby	20¼	27	463½	775¾
Warcop	792½	506½	670½	1795¼
Wharton	2	20	396	556¼
Winton	231	49½	393½	828¾

TABLE 3D

Agricultural Statistics 1960

PARISH	Total Acreage of Crops and Grass	Rough Grazings (in sole occupation)	Labour
Culgaith	6254¾	1553½	92
Glassonby	2969½	2617½	40
Great Salkeld	2847½	386	48
Hunsonby	2321½	87¾	35
Kirkoswald	8471¼	8087	104
Langwathby	4171¾	275½	60
Lazonby	3638¼	3305¼	58
Ousby	3889½	2686¼	73
Appleby	6428½	937¼	117
Asby	5424	2598½	44
Bolton	2526	73	41
Brough	1187	344½	14
Brougham	4731½	78	66
Brough Sowerby	1099¾	56	13
Cliburn	1703	19	25
Clifton	1849¾	30	38
Colby	985¾	179¾	12
Crackenthorpe	622¾	4	9
Crosby Garrett	1256¾	444	16
Crosby Ravensworth	8054¾	1510½	91
Dufton	2397½	2285	40
Great Strickland	1731¼	14	22
Hartley	1152½	987	9
Hillbeck and Musgrave	2536¼	2723½	38
Hoff	413¼	-	-

TABLE 3D Continued

PARISH	Total Acreage of Crops and Grass	Rough Grazings (in sole occupation)	Labour
Kaber	1770¼	463	15
Kings Meaburn	1701¾	272½	21
Kirkby Stephen	1447½	412	19
Kirkby Thore	2649	253½	41
Little Strickland and Thrimby	1760¾	153	27
Long Marton	2902¼	670¾	55
Lowther	3919¾	360	40
Mallerstang	1679	459¼	7
Milburn	1958	1192	28
Morland	1382¾	4	18
Murton	657¾	1679½	8
Nateby	686½	391	7
Newbiggin	1147¾	26½	17
Newby	2280	50	26
Ormside	2517¼	373	23
Sleagill	1334¾	19	14
Soulby	1920½	165½	25
Stainmore	5466¾	4277½	33
Temple Sowerby	1096¾	36½	18
Waitby	1352	943¼	9
Warcop	4477¼	733¼	53
Wharton	989¼	138	8
Winton	1603¾	250½	20

TABLE 3E

Agricultural Statistics 1960

(E) LIVESTOCK

PARISH	Cattle	Sheep	Pigs	Poultry
Culgaith	3428	11932	325	15695
Glassonby	1680	6604	8	8675
Great Salkeld	1565	1931	230	11729
Hunsonby	1350	1866	168	5685
Kirkoswald	4271	19647	154	16417
Langwathby	2405	2842	382	13837
Lazonby	1838	3278	255	6281
Ousby	2091	14973	186	9375
Appleby	3826	12535	42	5746
Asby	2701	11734	41	5923
Bolton	1892	1505	58	4285
Brough	563	939	74	1218
Brougham	2544	2903	33	4962
Brough Sowerby	611	1004	23	809
Cliburn	1013	1062	26	1775
Clifton	1334	1126	142	2293
Colby	474	732	28	898
Crackenthorpe	404	700	-	464
Crosby Garrett	724	2773	-	1623
Crosby Ravensworth	4526	16298	137	9337
Dufton	1272	12354	-	1459
Great Strickland	997	1573	62	4061
Hartley	491	3669	-	230
Hillbeck and Musgrave	1452	5440	1	1699
Hoff	254	342	-	816

TABLE 3E Continued

PARISH	Cattle	Sheep	Pigs	Poultry
Kaber	954	4985	8	543
Kings Meaburn	1073	2515	3	2420
Kirkby Stephen	703	1955	9	988
Kirkby Thore	1445	3179	151	4272
Little Strickland and Thrimby	1186	2068	67	3749
Long Marton	1885	4984	73	7527
Lowther	2187	4402	198	1874
Mallerstang	704	8486	22	1247
Milburn	950	8504	5	2730
Morland	816	1175	3	1175
Murton	492	5644	6	1122
Nateby	394	3013	4	469
Newbiggin	280	1410	-	1654
Newby	1267	2236	10	2937
Ormside	1219	2209	8	2832
Sleagill	722	1122	13	1172
Soulby	972	2196	23	2609
Stainmore	2398	13794	60	3982
Temple Sowerby	617	1118	48	2504
Waitby	649	3227	-	558
Warcop	2358	8109	70	5392
Wharton	456	3469	13	355
Winton	884	2711	20	901

TABLE 4

Main Types of Land Utilisation and Labour Force

PARISH	% Parish Improved	% Improved Arable	% Improved Temp. Grass	% Improved Perm. Grass	% Improved Oats	% Improved Turnips, Swedes and Mangolds	% Parish Rough Grazing	Acres per Worker.
Culgaith	51	56	37	43	10	5	49	132
Glassonby	42	65	43	34	13	6	58	174
Great Salkeld	76	68	42	32	12	5	24	77
Hunsonby	82	71	48	29	12	6	18	87
Kirkoswald	54	62	43	38	9	4	46	150
Langwathby	73	75	47	25	12	6	27	92
Lazonby	43	81	55	18	15	6	57	144
Ousby	30	74	48	25	13	6	70	175
Appleby	77	43	27	57	7	0.2	23	87
Asby	64	11	7	88	3	0.8	36	192
Bolton	90	38	25	62	6	2	10	68
Brough	75	13	8	86	2	0.7	25	112
Brougham	70	70	45	29	10	4	30	101
Brough Sowerby	90	17	14	82	1	0	10	92
Cliburn	96	60	37	39	13	5	4	77
Clifton	96	60	42	39	7	5	4	77
Colby	70	45	30	54	5	2	30	116
Crackenthorpe	46	26	14	73	4	2	54	150
Crosby Garrett	32	9	4	90	3	1	68	243
Crosby Ravensworth	56	25	17	73	4	1	44	158
Dufton	14	36	22	64	9	4	86	421
Great Strickland	74	39	23	60	6	3	26	106
Hartley	36	0.4	0	99	0	0	64	356

TABLE 4 Continued

PARISH	% Parish Improved	% Improved: Arable	Temp. Grass	Perm. Grass	Oats	Turnips, Swedes and Mangolds	% Parish Rough Grazing	Acres per Worker
Hillbeck and Musgrave	35	26	17	74	3	2	65	188
Hoff	78	18	10	81	3	2	22	63
Kaber	38	11	8	88	1	0.5	62	307
Kings Meaburn	71	23	16	65	3	1	29	113
Kirkby Stephen	46	8	5	91	0.9	0.5	54	164
Kirkby Thore	97	53	28	46	7	2	3	66
Little Strickland & Thrimby	74	40	24	59	8	2	26	87
Long Marton	42	44	29	56	7	3	58	126
Lowther	96	37	26	62	4	1	4	77
Mallerstang	20	0.4	0	99	0	0	80	1196
Milburn	25	34	17	65	7	4	75	284
Morland	78	28	19	70	7	1	22	97
Murton	5	30	16	69	7	2	95	1660
Nateby	31	5	4	93	0	0	69	313
Newby	76	33	23	67	4	2	24	114
Newbiggin	96	78	53	24	13	4	4	70
Ormside	92	26	16	73	6	2	8	117
Sleagill	95	20	12	71	4	2	5	98
Stainmore	33	4	4	96	0	0	67	494
Soulby	69	15	8	83	4	1	31	105
Temple Sowerby	88	36	18	63	7	4	12	69
Waitby	47	8	4	91	3	0.6	53	316
Warcop	38	44	29	55	9	3	62	216
Wharton	66	3	2	96	0.2	0.1	34	187
Winton	31	24	17	76	1	1	69	255

TABLE 5

Specimen Farms: Salient Characteristics

NAME	Spitals	Bridge End	Keld House	Low Rutter
Date Visited	Oct.1961	Oct. 1961	Nov. 1961	Oct. 1961
Altitude	350 feet - 425 feet	350 feet - 425 feet	450 feet - 550 feet	500 feet - 600 feet
Acreage	200	247	122	307
% Arable	80	78	67	51
% Perm. Grass	19	14	33	45
% Rough Grass	-	-	-	-
Open Fell Grazing (acres)	-	-	-	-
Dairy Cows	30	70	34	60
Beef Cattle	7	55	-	-
Sheep	10	171	130	540

NAME	Lankaber	Woodfoot	Hartley Fold	Harbourflatt
Date Visited	Dec. 1961	Nov. 1961	Jan. 1962	Jan. 1962
Altitude	500 feet - 675 feet	675 feet - 1050 feet	550 feet - 1800 feet	775 feet - 2000 feet
Acreage	238	123	908	973
% Arable	22	35	8	13
% Perm. Grass	45	58	51	9
% Rough Grass	27	2	40	75
Open Fell Grazing (acres)	-	200	200	2500
Dairy Cows	30	18	32	10
Beef Cattle	31	12	14	21
Sheep	240	231	1618	1450

TABLE 6

a. Land Utilisation at Spitals (1961)

Field	Acreage	Use
1	6.01	Permanent Grassland
2	12.07)	Wheat "Capelle"
3	12.85)	
4	15.79	1st Year Grass - grazed after hay crop
5	15.9	8 acres - Potatoes, Turnips, Cabbage, Mangolds (strip grazed) 7.9 acres Barley
6	5.07	Temporary Grassland - grazed after hay crop.
7	3.8	Permanent Pasture
8	12.28	Temporary Grassland - grazed after hay crop.
9	6.8	Temporary Grassland (Kale on 3 acres after June)
10	8.1	Oats: undersown with Temporary Grass
11	10.46	Temporary Grassland
12	0.97	Homestead
13	11.5	Temporary Grassland - grazed after hay crop
14	16.0	Temporary Grassland followed by Winter Wheat
15	20.5	Permanent Pasture
16	6.76	Permanent Pasture
17	10.44	Wheat - undersown
18	8.43	Temporary Grassland - grazed after hay crop
19	5.87	Temporary Grassland - grazed after hay crop
20	10.3	1st Year Temporary Grass - grazed after hay crop
	TOTAL 199.87	

Note: In addition 47.5 acres (Permanent Grassland) are rented at Kings Meaburn.

TABLE 6 Continued

b. Livestock at Spitals (1961)

Cattle:-	22 Friesian Cows
	16 Friesian Heifers
	15 Ayrshire Heifers
	28 Calves
	7 Bullocks
	2 Friesian Bulls
Sheep:-	9 Border-crossed ewes
	1 Hogg
Poultry:-	17 Hens
	21 Pullets

TABLE 7

(a) Land Utilisation at Bridge End (before October 1961)

Field	Acreage	Use
1	20.3	4th Year Temporary Grassland
2	16.4	3rd Year Temporary Grassland
3	15.9	3rd Year Temporary Grassland
4	2.4	3rd Year Temporary Grassland
5	15.06	Barley - undersown
6	23.24	12 acres Barley 8 acres Kale 3 acres Turnips
7	0.6	Woodland
8	1.8	Woodland
9	0.3	Path
10	1.7	River bank
11	5.57	River bank
12	7.01	Oats
13	17.0	Oats, Peas, Vetches (for silage)
14	14	2nd Year Temporary Grassland Silage Crop: strip grazed: grazed.
15	0.79	Woodland
16	8	Temporary Grassland
17	14	Potatoes followed by Winter Wheat ("Capelle")
18	8	Temporary Grassland
19	1.7	Woodland
20	3.9	Temporary Grassland
21	18.64	Permanent Grassland
22	0.1	River bank
23	0.21	Permanent Grassland
24	0.44	Permanent Grassland
25	0.01	River bank
26	2.87	Permanent Grassland

TABLE 7 Continued

Field	Acreage	Use
27	5.11	Permanent Grassland
28	0.47	Permanent Grassland
29	0.17	Troutbeck bank
30	0.18	River banking
31	1.72	Homestead
32	2.70)	3rd Year Temporary Grassland
33	6.61)	for Silage then strip-grazed
34	4)	
35	15.9	2nd Year Temporary Grassland
TOTAL	246.8	

(b) Livestock at Bridge End (1961)

Cattle:-	70	Friesian Cows
	15	Bullocks
	35	Friesian Heifers
	40	Stirks (6 months - 1 year old)
	50	Calves
	2	Friesian Bulls
Sheep:-	60	Border-crossed ewes
	1	Suffolk ram
	45	Gimmer Hoggs (Wensleydale crossed)
	20	Suffolk-crossed ewes
	110	Lambs
Poultry:-	400	Hens (Deep Litter)

(c) Livestock at Bridge End (1962)

Cattle:-	40	Blue-Grey Heifers
	35	Fattening Heifers
	19	Hereford crossed sucklers
	1	Aberdeen Angus Bull
	1	Hereford Bull
Sheep:-	250	Border and Wensleydale crossed ewes.
	240	Hoggs
Poultry:-	700	Accredited Laying Hens

TABLE 8

(a) Land Utilisation at Keld House (Nov. 1961).

Field		Acreage	Use
1		7	2 acres early potatoes 5 acres main crop potatoes
2		7	Temp. Grass (hay)
3		10	Perm. Grass
4		4	Oats (undersown)
5		4	Temp. Grass (hay)
6		6	Perm. Grass (owing to steep slopes)
7)	Medium - light soils	6	Temp. Grass (silage : hay)
8)		11	Spring Wheat
9)		5	Temp. Grass (hay)
10		11	Perm. Grass
11		3	Perm. Grass
12		3	Perm. Grass
13		4	Temp. Grass (early grazing followed by Kale-strip grazing)
14		6	4 acres Spring Wheat ("Sevenno") 1½ acres Swedes ½ acres Mangolds
15		4	Perm. Grass
16		11	Temp. Grass (silage)
17		11	Temp. Grass (silage, hay crop later)
18		6	Spring Wheat
19		3	Perm. Grass (hay)
	Total	122	

Note: In addition 20 acres of Permanent Grassland are rented.

(b) Livestock at Keld House (Nov. 1961).

Cattle:- 46 Ayrshire cows.
20 Heifers (over 2 years)
10 Heifers (6 months to 2 years)
1 Ayrshire Bull.

Sheep:- 47 Ewes) Swaledale Black Face crossed
83 Lambs) Border-Leicester Suffolk

Poultry:- 250 Hens
4 Geese
9 Ducks

TABLE 9

(a) Land Utilisation at Low Rutter (October 1961)

Field	Acreage	Use
1	2.3	Homestead
2	1	Homestead
3	15.1	Permanent Grassland
4	0.5	Orchard
5	0.4	Stackyard
6	12.8	Permanent Grassland
7	15	Temporary Grassland (hay)
8	1	Permanent Grassland
9	12	1st Year Temporary Grassland
10	7.3	1st Year Temporary Grassland
11	11.9	Turnips
12	13	Oats
13	18.5	3rd Year Temporary Grassland (hay)
14	11.3	Oats
15	6	Permanent Grassland
16	6.3	Permanent Grassland
17	10.3	Permanent Grassland
18	7.9	3rd Year Temporary Grassland
19	9.9	Permanent Grassland
20	7.4	Temporary Grassland
21	7.8	Temporary Grassland
22	4.5	Permanent Grassland
23	5.5	Permanent Grassland (hay)
24	13.2	Permanent Grassland
25	11.6	2nd Year Temporary Grassland
26	4.5	2nd Year Temporary Grassland
27	2.5	2nd Year Temporary Grassland
28	2	2nd Year Temporary Grassland
29	9.8	Permanent Grassland
30	10.3	Permanent Grassland (hay)

TABLE 9 continued

Field	Acreage	Use
31	2.4	Permanent Grassland
32	2.8	Potatoes
33	2.2	Permanent Grassland
34	7.8	Turnips
35	1.7	Permanent Grassland
36	7.7	Permanent Grassland
37	4.7	Oats
38	6.8	Permanent Grassland (hay)
39	3.2	Permanent Grassland
40	2.7	Permanent Grassland (hay)
41	10.1	1st Year Temporary Grassland
42	6.3	Permanent Grassland
43	1.5	Permanent Grassland
44	0.3	Permanent Grassland
Total	306.8	

(b) Livestock at Low Rutter

Cattle:- 36 Shorthorn cows
24 Friesian cows
18 Heifers
50 Calves
1 Shorthorn bull

Sheep:- 280 Ewes) Teeswater crossed
260 Lambs) Swaledale

Pigs:- 3 (home use)

Poultry:- 200 Hens (deep-litter)

TABLE 10

(a) Land Utilisation at Lankaber (December 1961)

Field	Acreage	Use
1	8.2	Permanent Grassland. Hay
2	12	Woodland
3	8.4	1st Year Temporary Grassland
4	3.3	Permanent Grassland. Hay
5	10.7	Permanent Grassland
6	7.2	Permanent Grassland
7	6.9	Permanent Grassland. Hay
8	6	2nd Year Temporary Grassland
9	4.6	Permanent Grassland
10	2.9	Permanent Grassland. Hay
11	4.4	Permanent Grassland. Hay
12	1.2	Permanent Grassland.
13	6.9	Permanent Grassland.
14	2.4	Permanent Grassland.
15	12.3	Permanent Grassland.
16	2.14	Homestead
17	7.3	Permanent Grassland.
18	3	Permanent Grassland
19	3.7	Permanent Grassland
20	8	3rd Year Temporary Grassland.Hay
21	1.5	4th Year Temporary Grassland. Grazed.
22	6.8	Permanent Grassland. Hay
23	3.3	Permanent Grassland. Hay
24	6.2	5th Year Temporary Grassland
25	6.9	Oats (undersown)
26	4.1	Barley
27	3.3	Oats
28	7.5	Turnips
29	1.9	Permanent Grassland
30	10	Permanent Grassland
31	65	Rough Grassland
TOTAL	237.6	

TABLE 10 continued

(b) Livestock at Lankaber

Cattle:-	30	Shorthorns, Friesians and Ayrshires
	1	Friesian bull
	31	Beef cattle (2 years old)
	23	Heifers
	20	Calves
Sheep:-	130	Cheviot ewes
	40	Suffolk ewes
	70	Lambs
Poultry:-	100	Hens

TABLE 11

(a) Land Utilisation at Woodfoot (November 1961)

Field	Acreage	Use
1	2	Permanent Grassland
2	4.5	Kale
3	4.5	1st Year Temporary Grassland. Hay
4	11	Permanent Grassland
5	22	Permanent Grassland
6	3.5	Permanent Grassland
7	4	5th Year Temporary Grassland. Hay then grazed.
8	4	Permanent Grassland
9	2	Permanent Grassland
10	1	Rough Grassland
11	6	3 acres 1st Year Temporary Grassland 3 acres Turnips
12	6	Permanent Grassland. Hay
13	4	Permanent Grassland
14	5	1st Year Temporary Grassland
15	2	Rough Grassland
16	3	2nd Year Temporary Grassland
17	4.5	3rd Year Temporary Grassland
18	12	Permanent Grassland
19	5	3rd Year Temporary Grassland
20	7	5th Year Temporary Grassland. Hay
21	5	Permanent Grassland
22	0.25	Sheep Fold
23		
24	0.5	Homestead
	4	Woodland
TOTAL	122.75	
Common Land	200	Rough Grassland
TOTAL	322.75	

TABLE 11 continued

(b) Livestock at Woodfoot

Cattle:-	18 Friesian cows
	6 Heifers (2 years old)
	4 Heifers (1 year old)
	4 Friesian bullocks (15 months old)
	3 Galloway bullocks (15 months old)
	5 Galloway bullocks (7 months old)
	4 Hereford calves
	6 Friesian calves
Sheep:-	105 Rough Fell ewes
	65 Rough Fell crossed Teeswater ewes
	61 Lambs
Poultry:-	100 Hens (deep-litter)
	96 Hens (battery housed)

TABLE 12

(a) Land Utilisation at Hartley Fold (January 1962)

Field	Acreage	Use
1	41	Permanent Grassland
2	2.6	Permanent Grassland
3	8.1	Temporary Grassland (hay) (grazed)
4	8.6	Temporary Grassland " "
5	8.3	Temporary Grassland " "
6	8.1	Temporary Grassland " "
7	4.7	Temporary Grassland " "
8	14.7	Temporary Grassland " "
9	8.5	Temporary Grassland " "
10	5.8	Temporary Grassland " "
11	10.3	Temporary Grassland " "
12	0.7	Permanent Grassland
13	1.2	Permanent Grassland
14	4.7	Permanent Grassland
15	1.5	Homestead
16	0.6	Permanent Grassland
17	20.8	Permanent Grassland
18	3.3	Permanent Grassland (hay)
19	30.7	Permanent Grassland
20	17.2	Permanent Grassland
21	15.3	Permanent Grassland (hay)
22	91.4	Permanent Grassland
23	15.4	Permanent Grassland
24	100	Permanent Grassland
25	69	Permanent Grassland
26	34	Permanent Grassland
27	1.6	Permanent Grassland
28	1.8	Permanent Grassland
29	4	Permanent Grassland
30	1.5	Permanent Grassland

TABLE 12 continued

Field	Acreage	Use
31	2.6	Permanent Grassland
32	2.2	Permanent Grassland
33	200	Rough Grassland
34	30	Rough Grassland
35	137	Rough Grassland
36	1	Woodland
Total	908.2	

Note:- Common grazing rights on 200 acres of Hartley Fell.

(b) Livestock at Hartley Fold

Cattle:- 32 Shorthorn cows
42 Heifers (1 to 2 years old)
10 Heifers (6 months to 1 year old)
32 Calves
14 Bullocks (1 year old)
9 Bull calves (2 months old)
6 Geld cows
2 Shorthorn bulls
1 Shorthorn bull (young)

Sheep:- 720 Swaledale ewes
657 Lambs (Swaledale crossed Wensleydale)
224 Swaledale lambs
12 Wensleydale Rams
5 Swaledale Rams

Poultry:- 8 Hens

Horse:- 1 Shepherding pony

TABLE 13

(a) Land Utilisation at Harbourflatt. (January 1962)

Field	Acreage	Use
1	2.8	Woodland
2	16.9	4th Year Temporary Grassland
3	2.4	Woodland
4	4	6th Year Temporary Grassland
5	6.5	1st Year Temporary Grassland
6	25.7	8 acres Turnips 6 acres 2nd Year Temporary Grassland 11.7 acres 8th Year Temporary Grassland (hay)
7	0.4	Permanent Grassland
8	17.9	Woodland
9	8	5th Year Temporary Grassland
10	2.2	Woodland
11	23.9	Temporary Grassland (hay)
12	0.8	Woodland
13	0.6	Woodland
14	0.7	Woodland
15	2.3	Rough Grassland
16	2.3	1st Year Temporary Grassland
17	0.4	Woodland
18	103	Rough Grassland
19	20.6	14 acres 8th Year Temporary Grassland (hay) 6.6 acres Oats (undersown)
20	8.3	Permanent Grassland
21	2	Woodland
22	15.9	Permanent Grassland
23	4.8	Woodland
24	29.9	Rough Grassland
25	6.9	Permanent Grassland
26	1.1	Homestead
27	0.8	Permanent Grassland
28	0.6	Permanent Grassland
29	49.7	Permanent Grassland (hay)
30	1.9	12th Year Temporary Grassland (hay)
31	13	3rd Year Temporary Grassland (hay)
32	44.4	Rough Grassland
33	532.4	Rough Grassland
Total	953.1	

Note: There are another 2,500 acres of Rough Grassland between Maize Beck and Swarth Beck (Common land).

TABLE 13 continued

(b) Livestock at Harbourflatt:

Cattle:-	30 Milking Shorthorns
	20 Dry cows and in-calf
	21 Heifers (1 to 2 years old)
	21 Bullocks (1 to 2 years old)
	42 Calves (under 1 year)
	1 Shorthorn bull
Sheep:-	500 Swaledale ewes
	230 Crossed ewes
	920 Lambs
Poultry:-	25 Hens
	12 Ducks

TABLE 14

Other Economic Activities

Group	Type	Location
MINING AND QUARRYING	Limestone Quarry	Hillbeck
	Limestone Quarry	Hartley
	Limestone Quarry	Crosby Ravensworth
	Barytes Mine	Silverband
	Anhydrite Mine	Long Meg
	Gypsum and Anhydrite	Kirkby Thore
PROCESSING	Plaster and Products	Kirkby Thore
	Paper	Little Salkeld
	Milk and Products	Appleby
	Animal Foods	Langwathby
	Slaughtering	Long Marton
		Soulby
	Saw Mill and Timber Yard	Kirkby Stephen
		Hunsonby
		Crosby Ravensworth

SERVICES

	Number	Appleby	Kirkby Stephen	Brough	Villages
Food Retailers	85	16	19	8	42
Professional	78	11	16	2	39
Other Retailers	76	24	32	10	10
Catering	61	14	15	4	37
Garages	38	8	5	3	22
Builders	13	3	1	-	9
Agric. Merchants	7	1	2	-	4
Engineers	7	1	-	-	6
Livestock Auctions	4	1	1	1	1
Haulage Contractor	4	-	-	-	4
Joiners	3	3	-	-	-
Gasworks	2	1	1	-	-
Elec. Goods (Warehouse)	1	-	-	-	1

TABLE 15

Elements of Scandinavian Origin

Element	Meaning	Derivation
by	village, town (Danish) homestead (Norse)	byr
thorp(e)	a hamlet or daughter - settlement dependent on i.e. colonised from, an older village.	thorp
thwaite	clearing; but many "thwaites" date from the 13th and 14th Centuries, the word having passed into local speech.	pveit
ton	wide range of meaning; primarily enclosed piece of ground, then enclosed land with dwellings on it, i.e. estate, manor, vill, village, wood.	tūn (Old English) but possibly from Scandinavian - tūn.

TABLE 16

Elements of Scandinavian Origin in the Eden Valley

Element	"by"	"thorp(e)"	"thwaite"	"ton"
REGION				
Upper Valley	1	2	No villages but several farms	1
Middle Valley	5			3
Western Uplands	4			
Eastern Uplands	4			3
TOTAL	14	2		7

TABLE 17

Distribution of Isolated Settlement

Altitude (in feet)	Upper Valley Farms	Upper Valley Houses	Middle Valley Farms	Middle Valley Houses	Eastern Uplands Farms	Eastern Uplands Houses	Western Uplands Farms	Western Uplands Houses
200–299			3	3				
300–399			29	36				
400–499			80	92			2	0
500–599	10	11	12	8	13	16	44	19
600–699	3	3			22	14	39	17
700–799	11	1			4	9	23	6
800–899	20	15			12	9	16	3
900–999	10	10			10	9	16	0
1000–1099	6	1			5	3	7	0
1100–1199	2	1			4	3	1	0
1200–1299	2	1			3	1		
1300–1399					0	0		
1400–1499					1	0		
TOTAL	69	43	124	139	74	64	148	45
%	17	15	30	48	18	22	35	15

TOTAL FARMS 415

TOTAL HOUSES 291

TOTAL DWELLINGS 706

TABLE 18

Density of Isolated Settlement

	Area (square miles)	Isolated Farms	Isolated Houses
Upper Valley	40	1.7 per sq. mile	1 per sq. mile
Western Uplands	115	1.3 per sq. mile	0.4 per sq. mile
Eastern Uplands	175	0.4 per sq. mile	0.4 per sq. mile
Middle Valley Lowlands	70	1.8 per sq. mile	2 per sq. mile

TABLE 19

Nucleated Settlement - Functional Structure

Village	Altitude (in feet)	Inhabited Dwellings	New Dwellings	Farms	Instut.	Food Retlrs.	Services	Bldrs.	Engin.	Retlrs.	Fill. Stat. (Pumps)	Cater.	Others
UPPER VALLEY													
Winton	550	39		13	3	2		1				1	
Hartley	600	31	2	6									
Nateby	650	32		5	2	1							
TOTALS		102	2	24	5	3		1				1	
MIDDLE VALLEY													
Kirkoswald	264	75	17	3	3	1	2			1	2(3)	3	Agric. Merch.
Langwathby	300	88	7	11	4	1	1			1	1(3)	2	
Lazonby	350	141	28	7	3	2	4			1	1(2)	2	Auction Haulier
Great Salkeld	350	58	2	10	4	1	1	1			1(1)	1	
Little Salkeld	350	13	16	5	1							1	Paper Mill
Temple Sowerby	350	89	9	7	3	1	1		1	1	1(4)	1	
Long Marton	390	52	13	9	3	1	1					1	Slaughter House
Kirkby Thore	390	108	24	9	4	2	1	1	1	1	1(4)	1	
Cliburn	400	41	8	7	4	1	1				1(2)	1	
Winskill	400	33	9	6	1	1	1				1(2)		
Hunsonby	400	13		4	1								Timber Yd.
Bolton	420	54	3	10	4	1	1				1(2)		
Colby	411	20		7	2								
Newbiggin	429	19	4	3	4		1						
Skirwith	440	44	9	9	4	1	1					1	
Morland	450	57	11	5	4	3				1	2(3)	2	Haulage

TABLE 19 (Continued)

Nucleated Settlement - Functional Structure

Village	Altitude (in feet)	Inhabited Dwellings	New Dwellings	Farms	Instut.	Food Retlrs.	Services	Bldrs.	Engn.	Retlrs.	Fill. Stat. (Pumps)	Cater.	Others
Melkinthorpe	450	15	1	3									
Warcop	460	72	4	6	5	3	2	1		3	1(2)	2	Fire Sta. 2 Farm Sup
Brampton	470	25		5		1	1					1	
Crackenthorpe	470	14		4	1							1	
Sandford	470	14		9	3								
Culgaith	493	68	24	10	4	1	1	1			1(1)	1	
TOTALS		1113	189	149	62	21	20	4	2	9	14(29)	21	
WESTERN UPLANDS													
Soulby	530	27	2	15	3	1	1				2(3)		Slaughter House
Great Ormside	518	12		5	1								
Little Musgrave	550	1		6									
Maulds Meaburn	550	37	1	7	3		3	1					
Kings Meaburn	550	19	2	10	3		1	1	1		1(1)	1	
Great Asby	600	44	1	16	4	1	1		1		1(2)	1	
Newby	600	26	1	7	1	1	1				1(2)		
Crosby Ravensworth	610	50	8	10	4	1	1	1				2	Saw Mill Warehouse
Great Strickland	610	33	2	8	4	1	1				1(2)	1	
Waitby	650	2		4									
Sleagill	650	11		8	2	1							
Crosby Garrett	680	26		14	3	1	1					1	Agric. Merchant

TABLE 19 (Continued)

Nucleated Settlement - Functional Structure

Village	Altitude (in feet)	Inhabited Dwellings	New Dwellings	Farms	Instut.	Food Retlrs.	Services	Bldrs.	Engin.	Retlrs.	Fill. Stat. (Pumps)	Cater.	Others
Little Strickland	800	10		3	3	1	1					1	Haulier
Reagill	830	7		7	1								
TOTALS		305	17	120	32	8	11	3	2		6(10)	7	
EASTERN UPLANDS													
Glassonby	500	16	4	7	2	1	1					1	
Melmerby	540	32	1	9	3	1	1			1	1(3)	1	
Blencarn	550	14	4	10	2	2	1						
Ousby	550	25	7	14	3		1					1	
Kaber	550	10		7	2	1							
Great Musgrave	550	22	2	4	2	1	1					1	
Gamblesby	600	20	4	16	3		1					1	
Dufton	600	59		8	3	2	1				1(2)	1	
Brough Sowerby	600	14	2	7	1				1			1	
Milburn	650	35	3	7	4	1							
Knock	650	18		7	2								
Kirkland	660	6	2	4	1								
Hilton	750	34		9	3	1	1	1				1	Haulier
Murton	800	19		6	1								
TOTALS		324	29	115	32	10	8	1	1	1	2(5)	8	

TABLE 20a

SUMMARY — Nucleated Settlement - Functional Structure

Region	Houses	New Houses	Farms	Instut.	Food Retlrs.	Ser-vices	Bldrs.	Eng.	Retlrs.	Filling Station (Pumps)	Cater.	Others
Upper Valley	102	2	24	5	3		1				1	
Middle Valley	1113	189	149	62	21	20	4	2	9	14(29)	21	
Western Uplands	305	17	120	32	8	11	3	2		6(10)	7	
Eastern Uplands	324	29	115	32	10	8	1	1	1	2(5)	8	
TOTALS	1844	237	408	131	42	39	9	5	10	22(44)	37	

TABLE 20b

Nucleated Settlement - Main Functions (%)

Village	Houses	New Houses	Farms	Other Functions
UPPER VALLEY				
Winton	66		22	12
Hartley	80	5	15	
Nateby	80		12	8
MIDDLE VALLEY				
Kirkoswald	70	15	3	12
Langwathby	76	6	9	9
Lazonby	75	14	3	8
Great Salkeld	73	2	13	12
Little Salkeld	35	43	13	9
Temple Sowerby	77	8	6	9
Long Marton	64	16	11	9
Kirkby Thore	82	4	6	8
Cliburn	65	12	11	12
Winskill	65	17	11	7
Hunsonby	69		21	10
Bolton	73	4	14	9
Colby	69		24	7
Skirwith	64	13	13	10
Newbiggin	62	13	9	16
Morland	66	13	6	15
Melkinthorpe	80	5	15	
Warcop	70	4	6	20
Brampton	76		15	9
Crackenthorpe	70		20	10
Sandford	54		35	11
Culgaith	61	21	9	9
WESTERN UPLANDS				
Soulby	51	4	29	16
Great Ormside	67		28	5
Little Musgrave	14		86	
Maulds Meaburn	72	2	13	13
Kings Meaburn	50	5	25	20
Great Asby	63	1	23	13
Newby	67	3	19	11
Crosby Ravensworth	64	10	13	13
Great Strickland	64	4	15	17
Waitby	33		67	
Sleagill	50		36	14
Crosby Garrett	66		30	14
Little Strickland	52		15	33
Reagill	47		46	7

TABLE 20b Continued

Nucleated Settlement - Main Functions (%)

Village	Houses	New Houses	Farms	Other Functions
EASTERN UPLANDS				
Glassonby	51	12	22	15
Melmerby	64	2	18	16
Blencarn	54	12	30	14
Ousby	48	14	28	10
Kaber	50		35	15
Great Musgrave	66	6	12	16
Gamblesby	44	9	36	11
Dufton	78		11	11
Brough Sowerby	54	8	27	11
Milburn	70	6	14	10
Knock	66		26	8
Kirkland	47	15	30	8
Hilton	66		18	16
Murton	71		25	4

TABLE 21

Urban Settlement - Functional Structure

	Altitude (in feet)	Houses	New Houses	Farms	Instut.	Food Retlrs.	Services	Bldrs.	Jnrs.	Eng.	Retlrs.	Fill. Stat. (Pumps)	Cater.	Others
APPLEBY	440	493	42	8	9	16	11	3	3	1	24	8(34)	14	Auction Agric. Merch. Gas Wks. Nurseries
BROUGH	580	149	31	5	6	8	2				10	3(28)	4	Auction
KIRKBY STEPHEN	550	500	28	3	13	19	14	1			32	5(17)	15	Auction Agric. Merch. Nurseries Timber Mill.

TABLE 22

Urban Settlement - Main Functions (%)

	Houses	New Houses	Farms	Other Functions
APPLEBY	79	6	1.2	13.3
BROUGH	70	14	2.3	13
KIRKBY STEPHEN	81	5	0.4	13

TABLE 23

Trains in an average week at Appleby

PASSENGER TRAINS	Type	Number
	Start	6
	Terminate	6
	Stopping	67
	Passing	61
	TOTAL	140

GOODS TRAINS	Type	Number
(a) Parcels and Milk	Terminate	6
	Stop	14
	Passing	35
	TOTAL	55
(b) Freight	Start	6
	Terminate	6
	Stopping	12
	Passing	358
	TOTAL	382

TABLE 24

Frequency of Buses (Weekly)

FROM PENRITH

Settlement	N.Su.	S.	T.S.	Daily	M.Thu.	T.	T.W.F.S.	N.S.Su.	TOTAL
Kirkoswald	4	2	1	2					42
Lazonby	4	2	1	2					42
Great Salkeld	4	2	1	2					42
Langwathby	3	3	1		1	2			27
Little Salkeld	3	3	1		1	1			26
Winskill	3	3	1		1	1			26
Melmerby	3	2	1				1		26
Gamblesby	3	2	1				1		26
Glassonby	3	2	1				1		26
Hunsonby	3	2	1				1		26
Crosby Ravensworth	2	2				1			15
Reagill	2	2				1			15
Newby	3								18
Morland	5	2				2			34
Kings Meaburn						1			1
Cliburn	5	2				2			34
Melkinthorpe		1				1			2
Brampton	3	3							21
Long Marton	3	3							21
Dufton								1	5
Knock								1	5
Milburn								1	5
Blencarn	3	3	1					1	33
Skirwith	3	3	1					1	33
Ousby	3	3	1					1	33

TABLE 24 (Continued)

Frequency of Buses (Weekly)

TO PENRITH

Settlement	Su.	N.T.Su.	N.Su.	S.	T.S.	Daily	M.Thu.	T.	T.W.F.S.	N.S.Su.	TOTAL
Kirkoswald			4	3	1	2					43
Lazonby											43
Great Salkeld											43
Langwathby	2		4	5	2		1	2	1	2	51
Little Salkeld	2		4	5	2		1	1	1	2	50
Winskill	2		2	5	2		1	1	1	2	41
Melmerby			3	2	1				1		26
Gamblesby			3	2	1				1		26
Glassonby			3	2	1				1		26
Hunsonby			3	2	1				1		26
Crosby Ravensworth			2	2				1			15
Reagill			2	2				1			15
Newby		1	1	1				1		1	23
Morland		1	2	3				3		1	38
Kings Meaburn								1			1
Cliburn		1	2	3				3		1	26
Melkinthorpe				2							2
Brampton			1	3						2	29
Long Marton				3						2	13
Dufton			1								6
Knock			1								6
Milburn			1	3						2	29
Blencarn			1	3						2	29
Skirwith	1		1	3	1					2	22
Ousby	1		1	2	1					2	21

TABLE 24 (Continued)

Frequency of Buses (Weekly)

FROM APPLEBY

Settlement	S.	Su.	Daily	N.Su.	T.	N.Thu.	N.W.S.Su.	W.S.	TOTAL
Culgaith			2	1					20
Temple Sowerby	5		4	3	2	1			47
Kirkby Thore	3		4	3	1	1			44
Crackenthorpe	3		4	3	1	1			44
Bolton			2	2	1				21
Warcop	5	1	3	2		1			39
Great Musgrave	1	1	1	2		1			21
Brough	2	1	3	2		1			36
Winton	2	1	3	2		1			36
Kirkby Stephen	2	1	3	2		1			36
Cliburn	3								3
Morland	3								3
Kings Meaburn	3								3
Colby	3								3
Newbiggin	2				1				3
Milburn	1				1				2
Knock	4				1				5
Dufton	4				1				5
Hilton	4				2				6
Murton	4				2				6
Burrells	1	1	1	2			2	2	20
Crosby Ravensworth								2	4
Maulds Meaburn								2	4

TABLE 24 (Continued)

Frequency of Buses (Weekly)

TO APPLEBY

Settlement	S	N.S.	Daily	Thu.	N.Su.	T.	N.Thu.	N.W.S.Su.	W.S.	TOTAL
Culgaith	3	1	5	1						45
Temple Sowerby	8		5		3	1				62
Kirkby Thore	5		5		3					58
Crackenthorpe	5		5		3					58
Bolton	3	2	3							36
Warcop	3		4		1	1	1			44
Great Musgrave			2				1			20
Brough	2		4		1	1	1			43
Winton	2		4		1	1	1			43
Kirkby Stephen	2		4		1	1	1			43
Cliburn	3									3
Morland	3									3
Kings Meaburn	3									3
Colby	3									3
Newbiggin	3					1				4
Milburn	2					1				3
Knock	5					1				6
Dufton	5					1				6
Hilton	4					2				6
Murton	4					2				6
Burrells	1				2			2	2	13
Crosby Ravensworth									2	4
Maulds Meaburn									2	4

TABLE 25

Buses per Week and Garage Availability

Settlement	Buses per Week	% Dwellings having Garages	Number of Garages
Temple Sowerby	109	44	46
Kirkby Thore	102	36	51
Crackenthorpe	102	67	12
Kirkoswald	85	28	27
Lazonby	85	33	59
Great Salkeld	85	51	36
Warcop	83	42	35
Brough	79	26	48
Winton	79	52	27
Kirkby Stephen	79	17	93
Langwathby	78	48	51
Little Salkeld	76	55	19
Cliburn	76	36	20
Winskill	67	54	26
Culgaith	65	52	52
Blencarn	62	50	14
Skirwith	55	27	17
Ousby	54	45	21
Melmerby	52	52	22
Gamblesby	52	50	20
Glassonby	52	59	16
Hunsonby	52	59	10
Brampton	50	46	14
Newby	41	47	16
Great Musgrave	41	39	11
Milburn	39	44	20

TABLE 25 Continued

Buses per Week and Garage Availability

Settlement	Buses per Week	% Dwellings having Garages	Number of Garages
Crosby Ravensworth	38	50	34
Long Marton	34	48	36
Reagill	30	79	11
Knock	22	48	12
Murton	12	52	13
Maulds Meaburn	8	35	16
Kings Meaburn	8	61	19
Melkinthorpe	4	58	11
Colby	6	70	19
Newbiggin	7	31	8
Great Asby	0	24	15
Nateby	0	54	20
Hartley	0	59	23
Kaber	0	59	10
Waitby	0	100	6
Soulby	0	71	31
Little Musgrave	0	100	7
Sandford	0	56	13
Crosby Garrett	0	57	23
Great Ormside	0	59	10
Great Strickland	0	44	18
Little Strickland	0	61	8
Sleagill	0	47	9
Kirkland	0	58	7

TABLE 26

Population of the East Ward Rural District 1851 - 1961

(excluding Orton and Ravenstonedale).

PARISH											
Appleby District	1851	1861	1871	1881	1891	1901	1911	1921	1931	1951	1961
Appleby	2709	2824	3225	2899	1776	1764	1736	1785	1618	1705	1755
Asby		440	492	496			370	377	365	307	280
Dufton		495	471	414			299	293	291	309	249
Kirkby Thore		455	538	513			449	469	421	511	486
Long Marton		762	834	709			587	619	600	685	692
Milburn		324	276	242			217	198	213	209	175
Newbiggin		107	116	139			139	120	110	105	107
Ormside		188	686	212			148	141	154	156	114
Temple Sowerby		374	476	420			352	351	330	324	316
TOTAL	5375	5529	7114	6044	6112	5821	5726	4353	4102	4311	4194

TABLE 26 Continued

Population of the East Ward Rural District 1851 - 1961

(excluding Orton and Ravenstonedale)

PARISH Kirkby Stephen District	1851	1861	1871	1881	1891	1901	1911	1921	1931	1951	1961
Brough		840	669	628			634	620	596	631	623
Brough Sowerby		140	125	133			117	98	115	100	93
Crosby Garrett		245	585	224			184	160	189	163	136
Great Musgrave		192	187	182			205	196	186	176	149
Hartley		215	167	149			133	146	125	133	129
Hillbeck		76	67	56			60	40	36	32	26
Kaber		268	192	200			149	136	179	132	107
Kirkby Stephen		1715	1879	1664			1546	1542	1588	1718	1618
Little Musgrave		61	58	71							
Mallerstang		232	585	271			226	221	203	147	119
Nateby		159	222	175			171	155	136	131	112
Smardale		44	180	44							
Soulby		453	458	275			189	200	182	199	186
Stainmore		672	536	494			516	490	444	387	306
Waitby		93	101	68			93	98	74	79	60
Warcop		806	813	720			604	577	594	633	484
Wharton		51	100	61			52	39	44	42	48
Winton		301	244	250			229	199	194	199	189
TOTAL	5478	6563	7168	5695	4922	4634	4504	4897	4053	4902	4385
TOTAL FOR EAST WARD	10853	12092	14282	11737	11034	10455	10230	9250	8987	9213	8579
% Change		11+	18+	-18	-6	-5	-2	-10	-3	+3	-7

TABLE 27

Land Utilisation of Westmorland (acres)

YEAR	Crops and Grass	Arable	Permanent Grassland For Hay	Permanent Grassland Not for Hay
1866	213876	53948	159931	
1871	229182	59023	42707	127452
1881	249006	44521	204485	
1891	290222	24261	51953	194008
1901	248702	40181	53871	154650
1911	244781	37527	58204	149050
1921	232178	42933	51957	137293
1931	228929	32803	58139	137987
1939	225138	28926	58931	137281

	Rough Grazing	Cattle	Sheep
1866	-	55328	224664
1871	-	58285	335935
1881	-	61397	320316
1891	-	68810	387299
1901	208319	70226	372248
1911	211906	70299	404299
1921	224033	70966	388566
1931	233228	76336	452710
1939	236152	85876	482310

TABLE 28

Comparison of Population Changes 1921 - 1961

		1921	1931	1951	1961
East Ward and Appleby	TOTAL	9250	8987	9213	8579
	% Change	-3	+3	-7	
Upper and Middle Eden Valley	TOTAL	17635	17263	17144	16451
	% Change	-2	-0.6	-4	

TABLE 29

Population and Population Changes 1921 - 1961

PARISH	1921	% Change	1931	% Change	1951	% Change	1961
Culgaith	667	+4.7	700	-4.7	667	+2.5	684
Glassonby	336	+7	361	-10.5	323	-7	299
Great Salkeld	394	-1.5	388	-4	369	+2	377
Hunsonby	359	+9	391	-0.5	371	+17	435
Kirkoswald	875	-4	833	-5	788	-12	695
Langwathby	512	-2	503	+14	575	+7	613
Lazonby	707	-4	667	-3	648	+0.1	649
Ousby	449	-12	400	-10	359	+7	384
Appleby	1785	-9	1618	+5	1705	+3	1755
Asby	377	-3	365	-16	307	-9	280
Bolton	262	+12	294	+9	320	-0.3	321
Brough	620	-4	596	+6	631	-1	623
Brougham	279	-6	262	+51	396	-22	307
Brough Sowerby	98	+17	115	-13	100	-7	93
Cliburn	194	-7	179	+7	192	-0.5	191
Clifton	397	-12	349	-16	292	+22	355
Colby	98	-11	87	+1	88	-10	79
Crackenthorpe	115	-19	93	-13	81	+12	91
Crosby Garrett	160	+18	189	-14	163	-17	136
Crosby Ravensworth	674	-8	619	-15	525	-1	519
Dufton	293	-0.6	291	+6	309	-19	249
Great Strickland	254	-4	244	-7	227	-14	194
Hartley	146	-14	125	+6	133	-3	129
Hillbeck	40	-10	36	-11	32	+19	226
Hoff	188	-2	184	+20	221	-14	189
Kaber	136	+32	179	-26	132	-19	107
Kings Meaburn	146	+12	163	-18	134	-9	122

TABLE 29 Continued

Population and Population Changes 1921 - 1961

PARISH	1921	% Change	1931	% Change	1951	% Change	1961
Kirkby Stephen	1542	+3	1588	+8	1718	-6	1618
Kirkby Thore	469	-10	421	+21	511	-4	486
Little Strickland	93	+9	102	-26	75	+17	88
Long Marton	619	-3	600	+14	685	+1	692
Lowther	407	+3	420	-16	351	+8	379
Mallerstang	221	-8	203	-27	147	-19	119
Milburn	198	+8	213	-2	209	-16	175
Morland	274	-3	267	-3	259	+8	280
Murton	411	+1	416	-23	322	-3	313
Musgrave	196	-5	186	-5	176	-15	149
Nateby	155	-12	136	-4	131	-14	112
Newby	169	+7	182	-7	169	+2	172
Newbiggin	120	-8	110	-4	105	+2	107
Ormside	141	+9	154	+1	156	-3	114
Sleagill	122	-2	119	-3	115	-10	103
Stainmore	490	-9	444	-13	387	-21	306
Soulby	200	-9	182	+9	199	-7	186
Temple Sowerby	351	-6	330	-2	324	-2	316
Thrimby	53	0	53	+21	64	-11	57
Waitby	98	-24	74	+7	79	-24	60
Warcop	577	+3	594	+7	633	-24	484
Wharton	39	+13	44	-4	42	+14	48
Winton	199	-3	194	+3	199	-5	189
TOTAL	17635	-2	17263	-0.6	17144	-4	16451

TABLE 30a

Population of the North Westmorland Rural District 1961

Age and Marital Conditions

	MALES			FEMALES		
	Total	Single	Married	Total	Single	Married
Total	7616	3600	3723	7738	3173	3715
Widowed	272			817		
Divorced	21			33		
Age Groups						
0 - 4	659	659		617	617	
5 - 9	558	558		594	594	
10 - 14	630	630		594	594	
15 - 19	540	536	4	497	476	21
20 - 24	460	360	100	391	169	222
25 - 29	454	195	258	449	68	377
30 - 34	532	134	394	491	63	424
35 - 39	516	96	419	449	44	394
40 - 44	488	80	402	482	53	412
45 - 49	498	70	410	503	53	414
50 - 54	525	59	443	513	69	398
55 - 59	513	66	413	497	66	352
60 - 64	386	54	301	476	71	299
65 - 69	342	33	261	403	72	212
70 - 74	264	37	186	342	75	115
75 - 79	149	20	93	241	53	60
80 - 84	72	11	32	134	25	12
85 - 89	21	11	5	49	8	3
90 - 94	9	1	2	14	1	-
95 and over	-	-	-	2	-	-

TABLE 30b

Population of the North Westmorland Rural District 1947

Age and Sex

Age Groups	Males	Females
0 - 4	697	662
5 - 14	1229	1185
15 - 17	374	392
18 - 19	176	224
20 - 24	573	586
25 - 34	1140	1105
35 - 44	1221	1196
45 - 54	1040	1072
55 - 64	807	964
55 - 59	- *	508
60 - 64	- *	456
65 - 74	617	754
75 - 84	264	316
85 and over	32	54
TOTAL	8170	8510

* No figures available

TABLE 31

Comparison of Age Groups in North Westmorland Rural District

	Age Group	1947	Age Group	1961	% Decrease
MALES					
	0 - 4	697	15 - 19	540	22.5
	5 - 14	1229	20 - 29	914	25.6
	15 - 24	1123	30 - 39	1048	6.6
FEMALES	0 - 4	662	15 - 19	497	24.9
	5 - 14	1185	20 - 29	840	29.1
	15 - 24	1202	30 - 39	940	21.7