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Abstract of thesis for the Degree of M.Litt: "Regionalism in Rural Settlement in the Pennines of North-west Yorkshire," by W. N. Teale.

In the Pennines of North-West Yorkshire the main physical divisions include the major valleys of Wensleydale, Swaledale, Nidderdale, Wharfedale and Ribblesdale, with the Vale of York to the east and the Craven Lowland to the south. Ever since Anglo-Saxon times these regions have been much more intensively farmed and have always supported denser populations and bigger villages.

Most outstanding in these respects, apart from the lowlands bordering the Pennines, have always been the wider valleys of Wensleydale (below Hawes), Lower Nidderdale (below Pateley Bridge), Middle Wharfedale (around Grassington) and Lower Wharfedale (below Bolton Abbey).

This regionalism in relation to the physical aspects is seen also in settlement morphology and the extent to which dwellings are nucleated or dispersed. Street villages and those with the square plan are today limited to the lowlands and Major Valleys, as also are village greens.

The Craven Lowland, a great trans-Pennine route, is distinguished by a linear pattern of population distribution and

village growth. The Pennine border on the east, where there are few major relief contrasts, is best taken as the edge of the hummocky drift which characterises the Vale of York. This boundary, which to some extent affects soils, finds its reflection very broadly in farming and settlement. The land to the east, often with bigger villages, has more arable cultivation and has had ever since Domesday Survey times. There are further differences here, as in architecture and building materials.

The geological or lithological divisions of the Pennines (Craven Highlands, Yoredales Pennines, Millstone Grit Dipslope) are most clearly reflected in settlement in the Prehistoric Period when there was a tendency for the Craven Highlands, with well-drained limestone tracts and open grasslands, to attract the peoples and cultures.

REGIONALISM IN RURAL SETTLEMENT

IN THE PENNINES OF NORTH-WEST

YORKSHIRE

(M. Litt. Thesis)

by

W. N. TEALE

Submitted....May 5th.1958.

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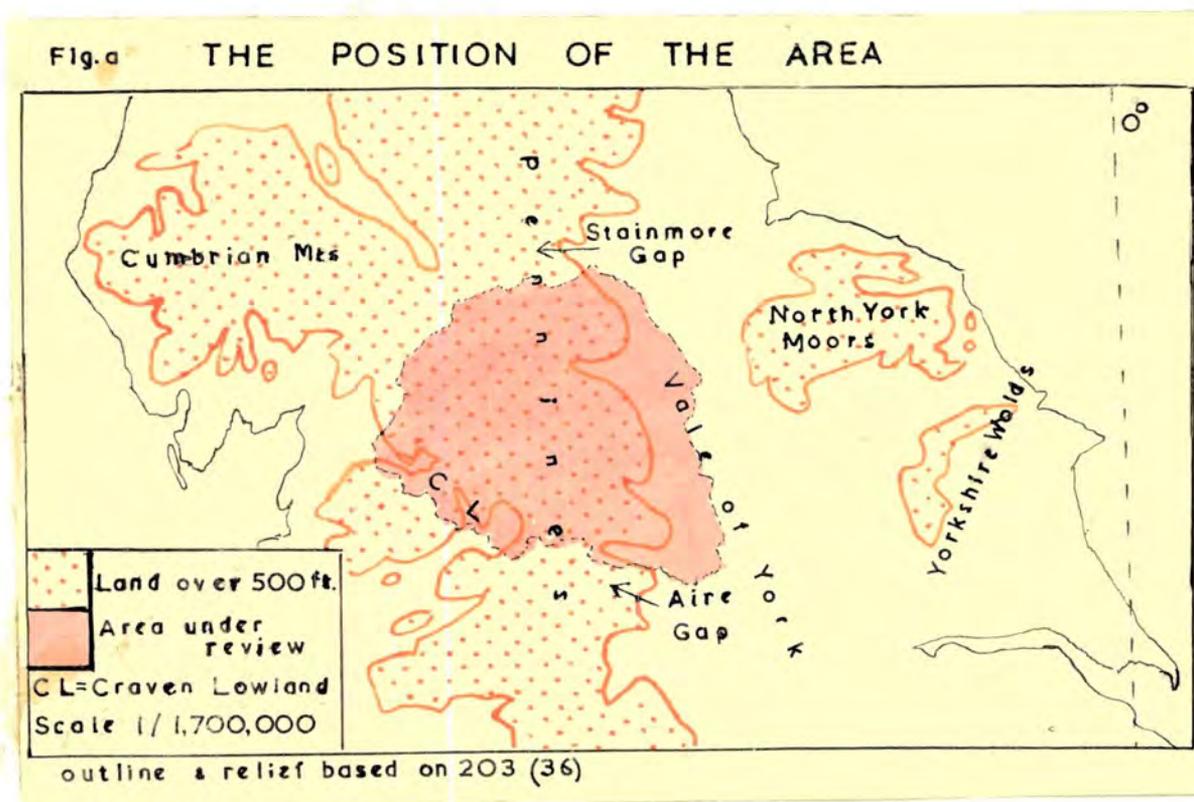
I. PHYSICAL DIVISIONS

A. The Influence of Geology and Structure on Topography and Landscape

1. Position, General Relief and Drainage of the Area.

The area consists of the Central Pennines of North-West Yorkshire, south of Stainmore, and margined by the Craven Lowland on the south and the Vale of York on the east.

(fig. a below)



The size of the area is about 46 miles from east to west and about 44 miles from north to south. The general relief, drainage, and geological structure is shown by Map 1 (with the drainage overlay), Map 2, and Section Sheet A.* This high block of country forming the Central Pennines is composed of Carboniferous rocks on the surface. There is little folding or faulting here owing to an underlying "Rigid Block" of Pre-Carboniferous rocks, compacted by 1(76), 2(234-235)* Caledonian earth movements, and the strata are approximately 2(234), 1(4) horizontal, giving rise to "slab and scar" scenery. 3(87)

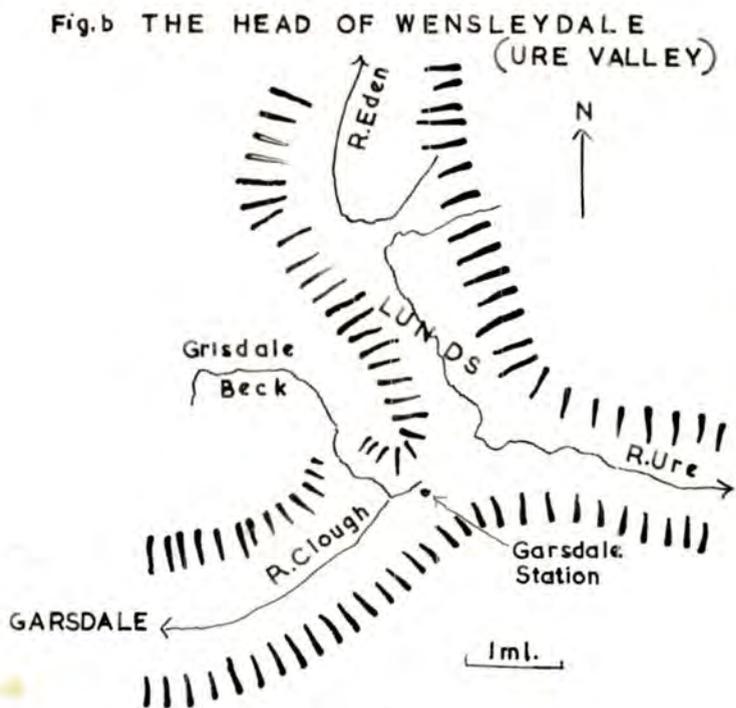
This stable block of horizontal strata is bounded on the west by the Dent Fault and on the south by the Craven Fault System. 2(234) The Dent Fault brings to the surface on the west the Coniston Grit, 1(14) forming hills such as the Howgill and Middleton Fells, 3(87) with more rounded relief, linking more with the Southern Lake District. The Craven Faults have 3(87-88) given rise to well marked scarps, overlooking the Craven Lowland, and clearly defining the southern boundary of the Central Pennines.

The general form of the Central Pennines is that of a dissected plateau, tilted gently eastwards, with steep western slopes. The main drainage is thus eastwards, though the Nidd and Wharfe flow south-eastwards and the

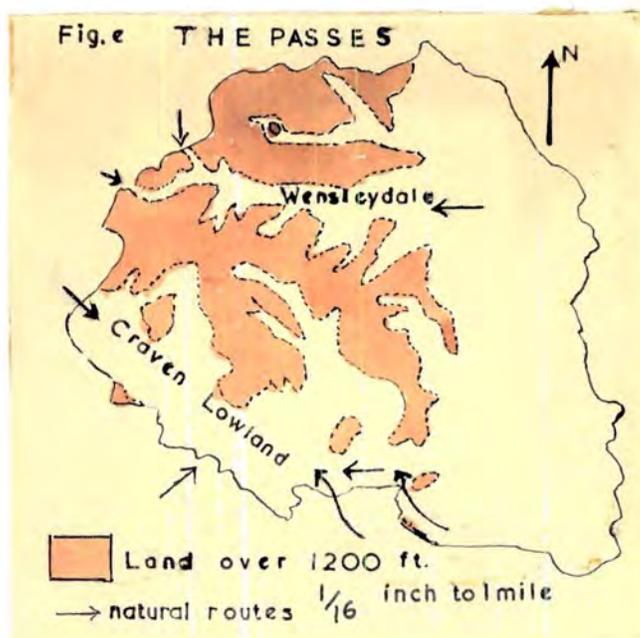
* In the pocket at the back of the map folder

* See List of Sources - page 497. The first figure refers to the marginal numbers in this list, and the one in brackets to the page in the source referred to.

Ribble and other streams further westwards drain the southern portion of the plateau southwards. The westward flowing streams, the Eden and Clough, are shorter, nearer to base level (Irish Sea), and cutting in relatively soft rocks. They have thus been able to work back by headward erosion into the Ure basin in the Lunds and near Garsdale Station, to produce a two-way pass at the head of Wensleydale (fig.b below, Appendix 1).



Similarly further southwards the Wenning and other aggressive westward flowing streams have worked back into the Aire basin to produce the Craven Lowland Gap through the Pennines (as will be described below), so that there are two valley routes or gaps leading through the Pennines from east to west, the Wensleydale and Craven Lowland throughways. (fig.e below).



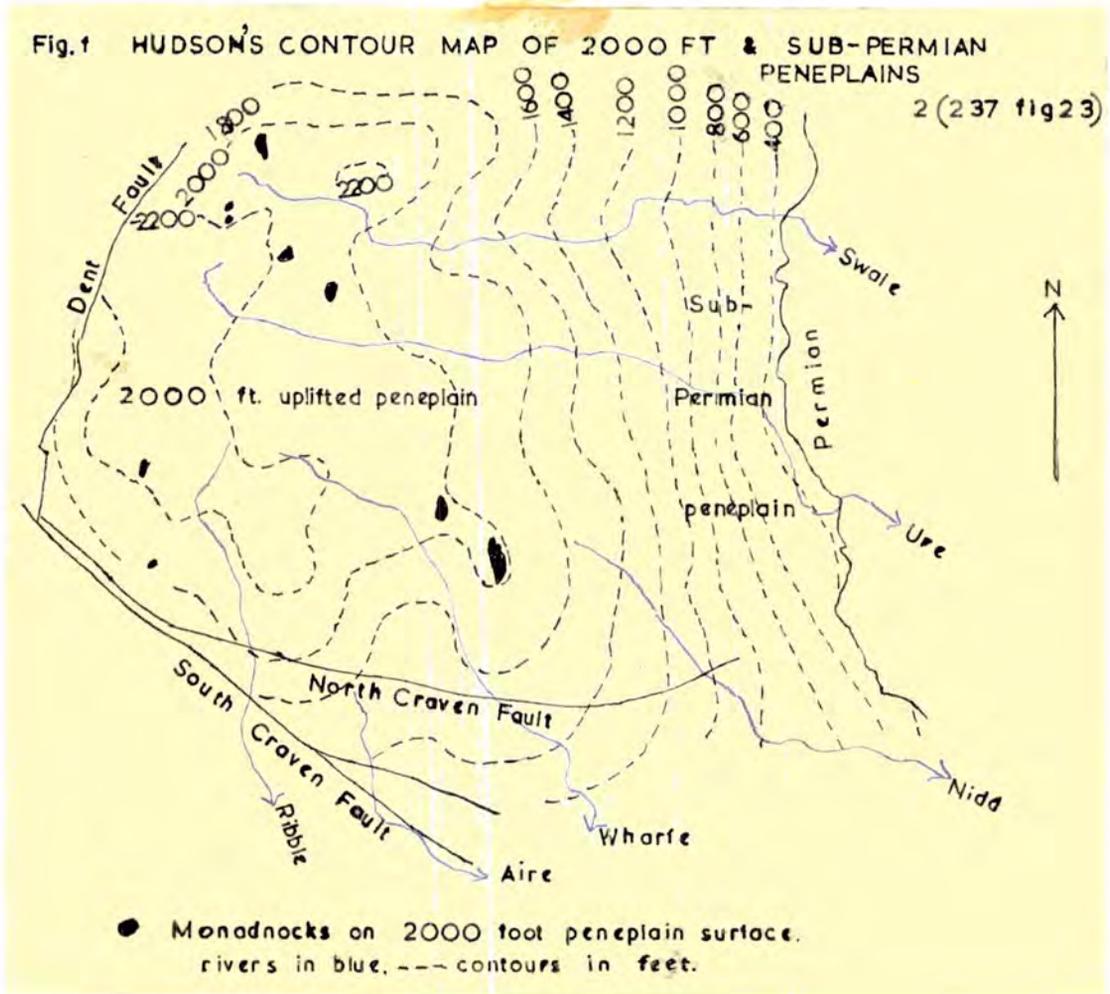
As fig. e shows, these are the only easy routes through the Pennine barrier. Of the two the Craven Lowland, a lowland route, is the more important.

2. The Divisions of the Central Pennines.

The plateau is bordered on the east by a long dip slope, and there are marked contrasts between the two areas.

The plateau, which rises to about 2,000 feet, is composed mainly of Yoredale rocks (i.e. alternations of limestones, sandstones and shales), whereas the greater part of the dip slope is composed of Millstone Grit on the surface. Also the erosion history of the two areas is different.

The plateau has a marked summit plane at 2,000 feet O.D. (Section Sheet A) which cuts across different strata, and is widespread in Northern England, cutting across 133(216), 14(153-154) tilted and folded rocks. The Pennine plateau is thus regarded as an uplifted peneplain, due perhaps to sub-aerial erosion, possibly in pre-Miocene times, and uplifted by the 2(236-238), 133(216-219) Miocene movements (Appendix 2). Hudson has reconstructed the original peneplain in the form of a contour map, by taking 2(237,238) sections along the present drainage divides. (Appendix 3, fig.f below).



On the uplifted peneplain the present drainage pattern was initiated, a slight original easterly tilt (as suggested by fig.f above) resulting in the original consequent streams

133(218 foll), 2(236 foll)
flowing due east. The easterly courses of the Ure
and Swale thus represent the persistence of this consequent
direction. The south-easterly direction of the Nidd,
Wharfe, Ribble etc. are explained by Hudson as due to
downwarping along the margins of the peneplain surface
before the original consequent streams had cut down very
2(238)
deeply, or as adjustments to structure (Appendix 4).

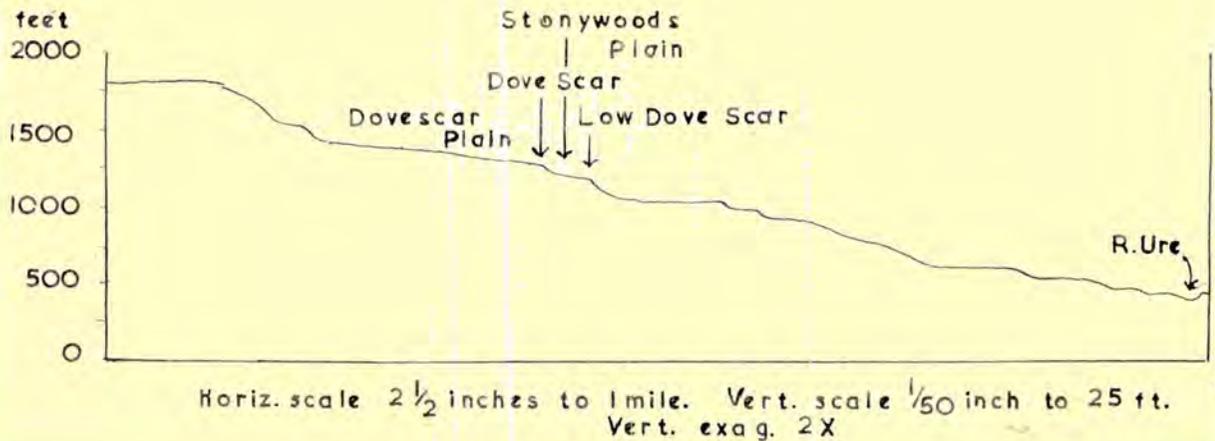
The dipslope, in spite of the obvious relation to the
dip of the strata (Section Sheet A), has also been regarded
as essentially a peneplain, but an older and exhumed one.
2 4
Hudson and Edwards have considered it to be the base of the
Permian, tilted by the various movements which have uplifted
the Pennines since Permian times, and exposed by the
removal of its cover of Permian and Triassic rocks. (see fig.
4(331,304), 2(237,238)
f above page 6). This view is based upon the way in which
the east Pennine slope continues the general line of the
4(331)
base of the adjacent Permian and the fact that this
relationship occurs even where the Millstone Grit strata
are folded, as south of the Rigid Block. It is possible,
therefore, that the term "Dipslope" may be inappropriate,
but as there is some relation to the dip we may continue to
use it here in this account.

These differences in the physiographic history of the

two areas, the plateau and the dipslope, are reflected also in present differences in the stage of dissection. In contrast with the mature dissection of the plateau, the dipslope is relatively smooth and little broken by major valleys. It is in an immature stage of dissection by secondary consequent streams and this may be because of its later exposure to stream dissection, after the protective cover of Permian and later strata had been worn away, but the fact that it is a lower area formed of hard rock is also important.

Further contrasts in topography derive from the lithological differences between the two regions. On the plateau the alternating limestones, sandstones, and softer shales of the Yoredales give rise to a characteristic terraced scenery (fig.g below) and an abundance of waterfalls in the tributary valleys.

Fig.9 SECTION DOWN THE NORTHERN SLOPES OF PENHILL
SHOWING LIMESTONE TERRACES



On the other hand on the dip slope the Millstone Grit
gives rise to craggy grit "edges", as at Brimham Rocks,⁴⁽³⁰⁵⁾
with landslipped valleys in the shales,³⁽⁹⁰⁾ and in the southern
portion of the dip slope, south of the Rigid Block,^{4(303 fig.56)} folding
has had an effect on scenery, giving rise to ridges along
the strike of the harder grit or sandstone bands between
the softer shales, as for example south of Harrogate.^{4(353), 140(29,30)}
These features, however, form very minor incidents in the
general relief, diminished by the thick peat in the more
elevated areas, and the covering of glacial drift which
plasters most of the lower part of the region,^{12(54), 4(304), 3(162)} and tends to

3(115), 12(3), 27(292)
make it over-watered.

The two regions, the plateau and the dip slope, can be further sub-divided.

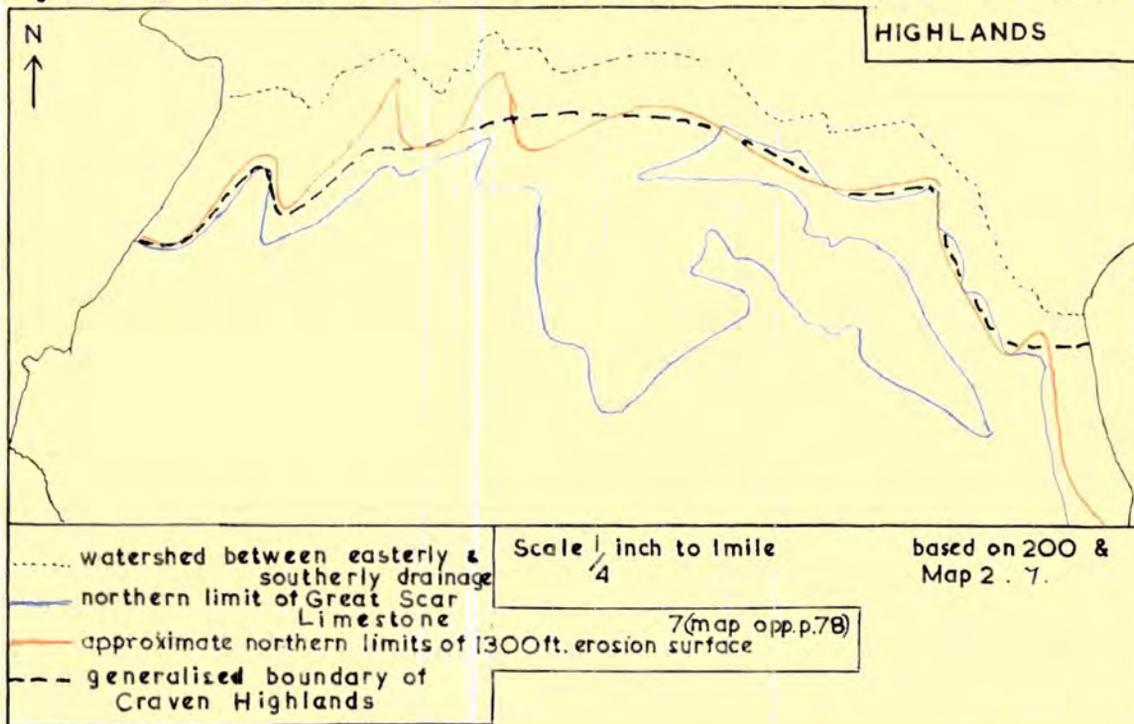
The elevation of the 2000 foot peneplain to its present level was interrupted by pauses during which lower erosion surfaces were cut. In particular a 1300 foot surface, developed on rocks of different ages (Appendix 5), is very conspicuous in the southern part of the plateau towards the Craven Faults (Section Sheet B). The erosion of this surface (possibly by a local marine incursion) certainly took place prior to the Pleistocene, as the occasional covering of boulder clay shows. (Appendix 6). The considerable denudation involved has resulted in the removal of much of the Yoredales strata to expose the underlying Great Scar Limestone, as in the vicinity of Ingleton, Malham etc, and extensive limestone benches have been produced round the Yoredales hills and on the sides of the valleys. The exposure in this southern portion of the Pennine plateau of the thick Great Scar (Avonian) Limestone has led to a typical Karst scenery with all the many features characteristic of a mature stage in the Karst erosion cycle. There are dry valleys, clints, caves, potholes etc, whereas in the Yoredales region to the north limestone bands are relatively thin and give rise merely to * in the pocket at the back of the map folder.

a few Karst features, which do not dominate the scenery as they do to the south.

Another lithological change takes place on the northern portion of the dipslope. Here along the line of the Richmond - Howgill anticline erosion of the Millstone Grit has exposed the underlying Yoredales rocks round Lower Wensleydale and Swaledale (Appendix 7), and there is a change from Millstone Grit to Yoredales topography.

We may thus divide the Pennine area into 4 quarters, as shown on Map 3; the Yoredales Plateau, the Limestone Plateau to the south (which has been termed the "Craven Highlands"), the Millstone Grit Dipslope, and the Yoredales Dipslope (Appendix 8). The boundaries between these areas are approximate rather than precise. The dipslope grades westwards into the Plateau in a transitional belt, and in the north, where there is no lithological break, the separation of the Yoredales Dipslope from the Yoredales Plateau has demanded the drawing of sections, as described in Appendix 9. Likewise the Craven Highlands grade into the Yoredales Plateau to the north, but it is possible to obtain a boundary between the two areas by generalising the northern limits of the 1300 foot surface and those of the Great Scar Limestone outcrop, as shown on fig.h below.

Fig. h FACTS DETERMINING THE NORTHERN BOUNDARY OF THE CRAVEN HIGHLANDS



The Yoredales Dipslope and the Yoredales Plateau constitute the "Yoredales Pennines".

Superimposed on this division of the Pennines is the pattern produced by the larger valleys.

3. The Major Valleys (Maps 4 and 5)

The major valleys cutting into the Pennines are Wensleydale and Swaledale in the Yoredales Pennines; Lower Wharfedale and Nidderdale on the Millstone Grit Dipslope; Upper and Middle Wharfedale, Littondale, and Upper Ribblesdale in the Craven Highlands. These valleys are most outstanding on the relief map (Map 4) and, together with the Gilling Beck Valley, may be separated from the other Pennine valleys on the basis of their more extensive spreads of alluvial and (river terraces, Appendix 10) fluvio-glacial material, which, apart from these valleys, is mainly limited to the lowlands (Craven Lowland and area east of the Permian edge (see Map of Alluvium)*). The more extensive alluvium in the major valleys broadly reflects the greater downcuttings of these valleys (which lie mainly below 800 feet)† and the gentler gradient, apart from short stretches (Appendix 11), as compared with most other valleys in the Pennine area i.e. a more mature stage in the erosion cycle (Appendix 12).

There are, of course, other valleys in the Pennine area cut down below 800 feet, and in fact the eastern part of the dipslope lies below this level, but in most cases these valleys have steeper gradients and less alluvium. The only ones comparable in gradient and in extent of

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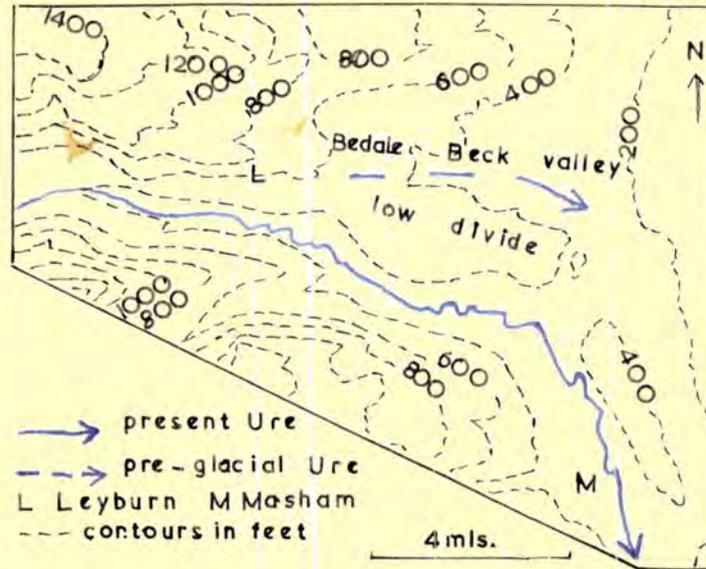
† The 800 ft contour is shown by a thicker line on Map 4.

alluvium with the major valleys are (neglecting the minor Grimple Valley.):

See Section Sheet C. { Bishopdale - below 550 feet O.D., possibly overdeepened by ice, which may have entered the area over the low col from Wharfedale. 16(21-24)
{ Semerdale
{ Bedale Beck
{ Lower Dentdale near Dent.

The lower part of Dentdale forms a small separate division on the map of physiographic regions. (Appendix 13) The lower portion of Bishopdale falls largely within the Wensleydale division. The Bedale Beck valley, which is very wide for such a small stream, is drift-filled and continues the line of the Ure above Leyburn, before this river bends southwards (fig. i below) and flows via Masham through the Tanfield Gap in the Magnesian Limestone escarpment, a course which A. Raistrick has shown to represent a glacial diversion. Thus the Bedale Beck probably occupies the pre-glacial Ure valley.

Fig.1 THE URE DIVERSION 8 (405 foll), 200.



The old and present valleys of the Ure together ^{almost} form a single division on the relief map, the broad funnel-shaped area of low ground below Leyburn, divided only by a low spur. The area as a whole may be termed the "Lower Wensleydale Foot Region" (Section Sheet D, Section 14).

The only other valley comparable with the major valleys in width of alluvial spreads, Semerdale, owes this to special factors. A lateral moraine of the glacier in * in the pocket at the back of the map folder.

Wensleydale, of which it is a tributary, impounded in Semerdale an extensive glacial lake which persisted until 5(843) it was largely infilled with alluvium. Though we may distinguish this valley on the basis of its alluvium, it is not as deep as the major valleys, cut down below 800 feet. It may be grouped with the upper part of Upper Ribblesdale above Horton ("Upper Ribblesdale Head"), which also lies above 800 feet, though this area is distinguished by 10(265) drumlin topography.

The boundaries of the major valleys (with which we now include the Dent Valley, Bedale Beck Valley and Semerdale) on the map of physiographic divisions (Map 5) are drawn by examination of the contours on the 1 inch and 2½ inch Ordnance Survey Maps, cross sections being constructed (Appendix 14) where necessary. The higher and steeper valley heads, with little alluvium, are excluded.

This grouping of the major valleys in relation to downcutting, gradient, and extent of alluvium and fluvio-glacial deposits, is admittedly a generalisation, since these deposits are not continuous down the valleys. Such gaps as occur, however, are not usually very extensive. In any case we are concerned with defining regions having

significance in terms of land use, and the effects of alluvium on farming, for example, are not limited entirely to the actual alluvial spreads but are felt to some extent over part of the intervening areas as well.

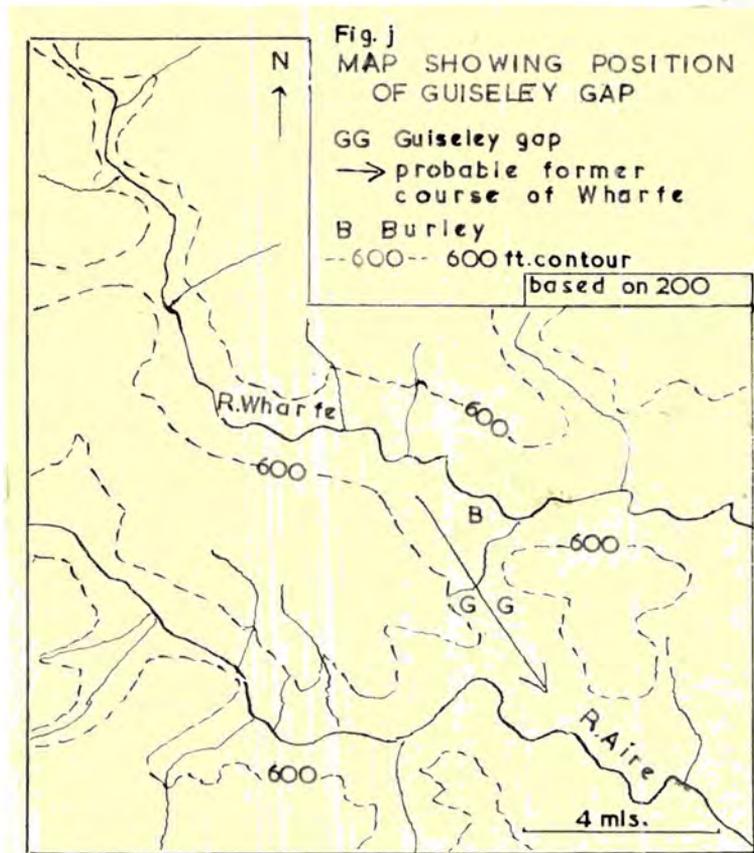
Three of the major valleys, Wensleydale, Wharfedale below the junction with Littondale (excluding the gorge between Appletreewick and Bolton Abbey where the stream cuts across the strike of the hard Millstone Grit), and Nidderdale (below Pateley Bridge), are markedly wider than the others (Map 5, Section Sheet C, Appendix 15). Various factors have contributed to the greater width of these 3 valleys.

In the case of Nidderdale it was situation on the lower part of the dip slope.

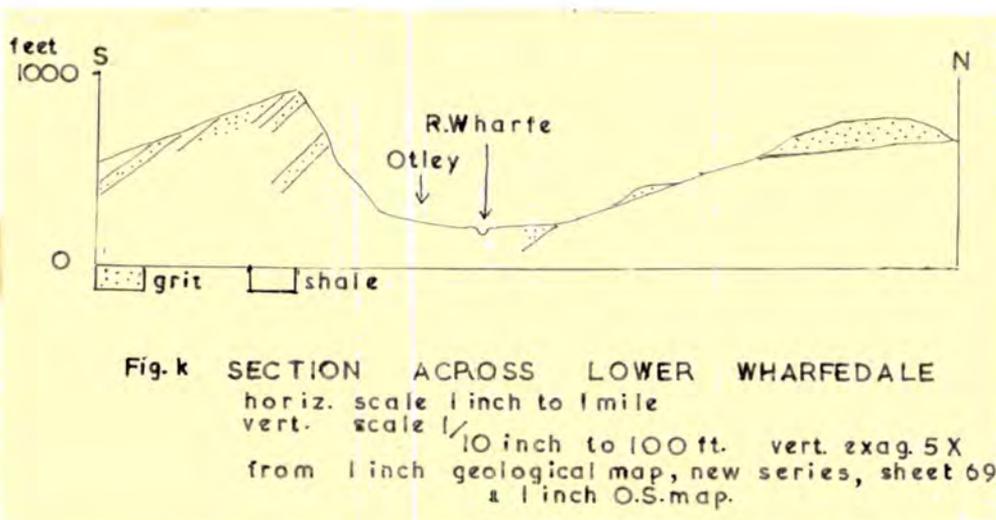
The width of Wharfedale above Appletreewick ("Middle Wharfedale") is due to:

- (a) erosion of the soft ~~Mid-Bowland~~ ^{and Mid-} Shales thrown down on the south side of the North/Craven Faults ^{52(15,17)} which cross the valley just north of Linton.
- (b) development along the strike of the strata on the "Rigid Block" to the north of the faults, above Grassington.
- (c) the junction of the important tributary of Littondale.

The width of Lower Wharfedale (below Bolton Abbey), where the dip is southwards on the northern margins of the Yorkshire coal basin, can be attributed to development along the strike of the soft Sabden shales as a result of river capture (fig.j below).



The alignment of the Guiseley Gap with the upper course of the Wharfe, above Burley, suggests that this gap was the original course of the Wharfe when it was a tributary of the Aire. It is probable that the Lower Wharfe, below Burley, worked back along the outcrop of the easily-eroded shales, and beheaded the former tributary of the Aire, leaving the wind gap at Guiseley. The lower Wharfe valley was thus originally excavated by a separate and more vigorous stream in softer strata and this part of the valley is cut down to a particularly low level. With the additional volume of water, due to capturing the Upper Aire, there was the extra power to widen the valley. This was probably helped by "uniclinal shifting". As the dip of the strata here is southwards towards the basin of the West Riding Coalfield, the river has worked down along the dip to increase the width of the valley as well as to produce an assymetrical profile with a gentle slope to the north and a steep slope to the south (fig.k below).

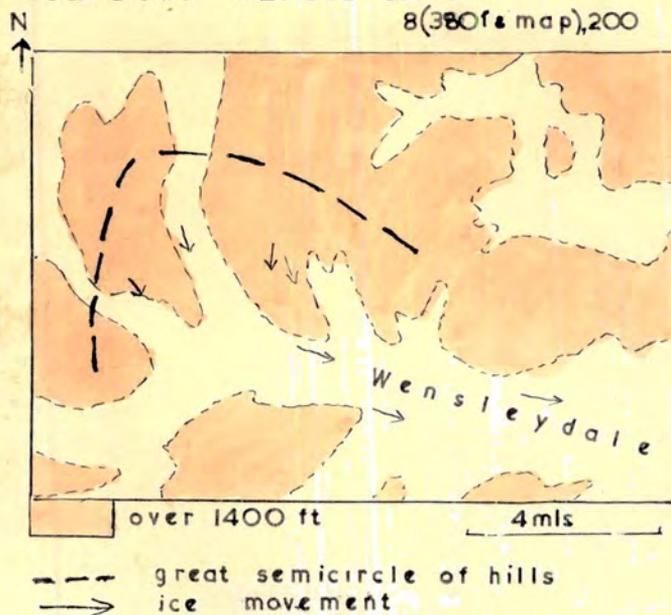


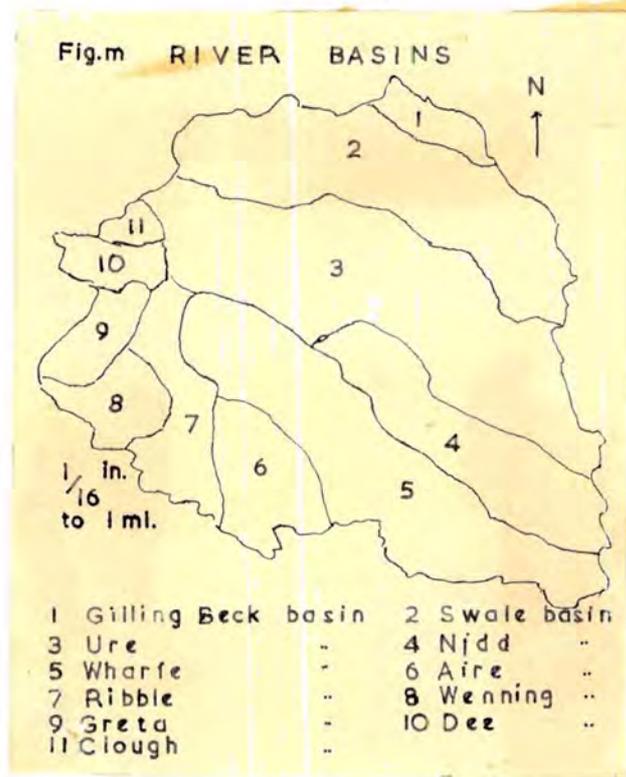
This Lower Wharfedale region has the most extensive alluvial and fluvio-glacial deposits.

The width of Wensleydale may perhaps be explained as follows.

- (a) Wensleydale had an outstandingly large ice-collecting area in glacial times and must have had a larger glacier than most other valleys, capable of more extensive erosion (see fig.1 below).

Fig.1 SKETCH MAP SHOWING THE GREAT SEMICIRCLE OF HILLS SENDING ICE DOWN WENSLEYDALE
8(380 of a map), 200





(b) The Ure has a larger drainage basin than others in the Central Pennines (fig.m above), and probably had a larger volume of water capable of more extensive erosion. The development of more tributary streams is not apparently related to the underlying structure, but may have been the result of slight fortuitous slopes on the original surface of the uplifted 2000 foot peneplain. The marked parallelism of the Ure

tributaries on the south side and their north-easterly directions suggests a slight slope in this direction originally.

Lower Wensleydale, i.e. the part below Aysgarth, where a rejuvenation head occurs, is wider than Upper Wensleydale (above Aysgarth), and below Middleham, in the area described above as the "Lower Wensleydale Foot Region" (page 15), there are particularly extensive alluvial and fluvio-glacial deposits, such as also occur to the north where the Swale enters the Vale of York. (Lower Swaledale Foot Lowland).
16(17,18)

4. The Eastern Margins (Appendix 16, Map Sheet 6, Map 7, Section Sheet D*)

The lower land to the east of the Pennines, and part of the Vale of York, is due to the easterly dip of the strata, and the erosion of the relatively soft Triassic 133(216) 4(333-342), 9(367-370), 3(96), 133(225), rocks. It is heavily covered with glacial drift 139(53 foll) and, in comparison with most of the Pennine area, the glacial deposits have a greater influence on topography, 4(333 foll), 9(367 foll), 3(96) the "Solid" rocks rarely emerging on the surface.

In view of the thick drift covering, breaks of slope along the Pennine edge due to structural causes are not very marked, and even on a small scale map it is often difficult to separate the Vale of York from the Pennine area by any precise line of demarcation obtained from the contours. Only where rivers have cut their valleys against the slope i.e. parallel to the Pennine edge, can this edge be distinguished on the quarter-inch scale contour map, as on the western sides of the Gilling Beck Valley and the Ure Valley from about Jervaulx to Grewelthorpe.

The only influence on topography of the underlying structure is seen in the slight feature produced by the Magnesian Limestone, which dips gently eastward. South of the area under review, where the Magnesian Limestone overlies soft shales in the Coal Measures and is free of drift, it * in the pocket at the back of the map folder

gives rise to a well marked escarpment, 50 to 150 feet in
3(95,154)
height. In the region being considered, however, where the
Magnesian Limestone rests on relatively hard rocks, its
resistance to erosion depends mainly on its greater porosity
3(95)
than the rocks on which it rests and it gives rise to only
a small escarpment, partly obscured by drift north of
4(304)
Knaresborough. Though the scarp is discontinuous and
3(95)
rarely more than 50 feet high, except on valley sides, it
can be traced frequently on the 2½ inch O.S. map, and has
been adopted as a physiographic boundary separating the
3(87)
Permian belt by Beaver. It is breached by the major valleys
and the Bedale Beck Valley forms a wide corridor through the
escarpment.

Regional contrasts in topography on the eastern margins
of the Pennines depend also on the character of the drift
deposits, which form 2 divisions.

- (a) East of West Tanfield and Crakehall, outwash sands and
gravels, laid down on the margins of the Vale of York
4(333-342),9(367,368)
ice as it finally retreated northwards, form a low
plain below 200 feet. This smoothly veneered area is
for the most part diversified only by occasional esker-
like features, as near Kirklington and Carthorpe,
though the Well moraine forms a low ridge across the

9(367,368)
area in the south.

In the vicinity of Snape, Ainderby Mires (Miers), Hackforth, and Killerby Hall, on or near the borders of the area, fen peat has infilled depressions to form very flat low-lying tracts. 9(374)

- (b) To the west of the outwash the drift is morainic, i.e. characterised by numerous moraines (Appendix 17 and 18), trending mostly from north to south or north-west to south-east, and laid down on the western margins of the Vale of York ice in the later stages of glaciation. 133(225),4(333-339),139(21,22,30)

The north-south grain is further emphasised by glacial overflow channels, also formed along the margins of the Vale of York ice, and is seen again in the directions of the major rivers, most of which, like the Ure, were diverted southwards by the ice edge and cut down so deeply as permanently to establish their new courses. 5(532 foll), 5(535,544,554)

The western boundary of the "morainic drift" rises from the level of the Magnesian Limestone escarpment near Knaresborough northwards to 600 feet west of Masham, on the margins of the Millstone Grit Dipslope, and to even greater heights further northwards on the Yoredales Dipslope. 4(334),8(Map etc)

This drift limit provides a further physiographic boundary as westwards on the Millstone Grit Dipslope the boulder clay

is older, thinner, discontinuous and relatively featureless
("without sharp features of deposition"^{4(333 foll)}). This is
according to Edwards, who refers specifically to the area
south of the Nidd, but a similarly featureless drift occurs
further northwards, west of the "morainic drift", as in
the Masham area.^{8(369, Map)} The western edge of the "morainic drift"
is thus an important physiographic boundary (Appendix 13),
forming "the western edge of a wide area where the dominant
topography is one of morainic ridges and hummocks, of which
individuals often form hills of considerable size"⁴⁽³³⁹⁾ (Edwards).
On the Yoredales dip slope to the north similar contrasts
^{8(369, map)} occur, so that the western edge of the "morainic drift" often
persisted as a topographic boundary there as well.

(Map 7)

Thus we have a large number of physiographic divisions
along the east Pennine margins: the Outwash Plain (the
line of which is continued southwards by the plains of the
lower Ure below 200 feet), the Magnesian Limestone
Escarpment (divided into the southern relatively drift-free
area and the northern drift-covered portion north of
^{4(333 foll)} Knaresborough), the Gilling Beck Valley, the Lower
Swaledale Foot Lowland, the Lower Wensleydale Foot Region,
and finally the edges of the dip slope distinguished from
the slopes to the west by the occurrence of lateral

moraines (the Morainic Dipslope). Since we have such a number of often small regions here we may group them together as the "Eastern Region", lying east of the western edge of the "morainic drift" which characterises most of these regions. The western edge of the morainic drift is very approximate in the North, particularly between Lower Wensleydale and Swaledale, where it has necessarily had to be based on very incomplete data (Appendix 19). However as it indicates very broadly where the drift topography characteristic of the Vale of York begins (above page 27), it defines on the west, if only in a very general way in places, an area presenting a major topographic contrast with the Pennines. We also include in the Eastern Region the semi-drift-free Magnesian Limestone escarpment south of Knaresborough.

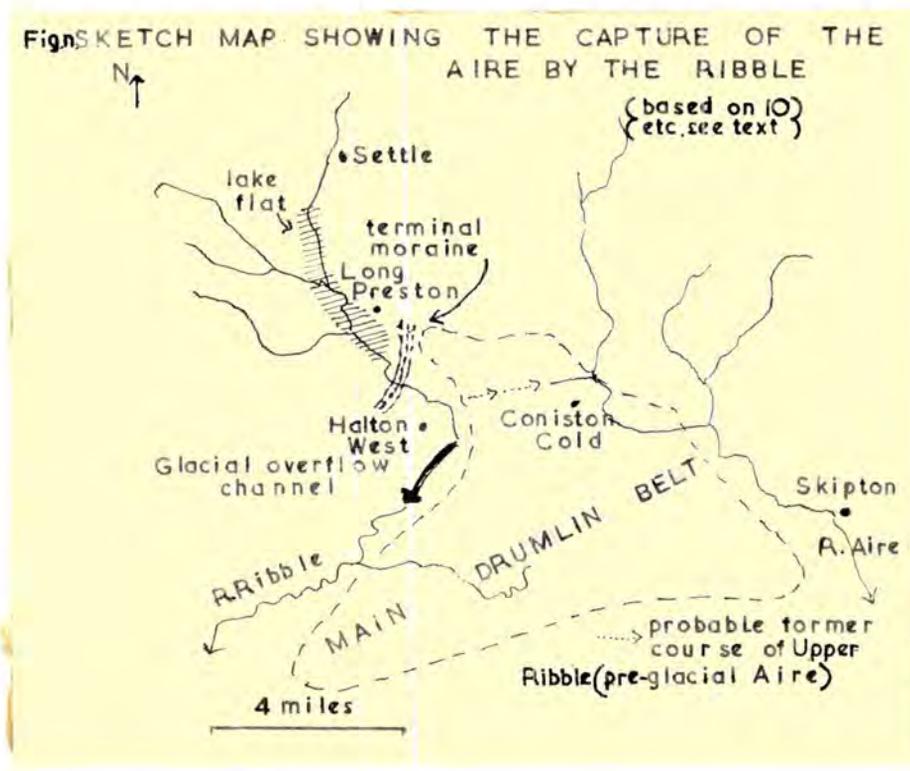
5. The Craven Lowland (Maps 1 (with drainage overlay)^{2,}
and 3)

The Craven Lowland, lying at about 500 feet O.D. is bounded on the north by the Craven Fault scarps, in the east by the massive "outposts" of the Millstone Grit Pennines forming Skipton Moor and Rylstone Fell, and in the south, beyond the limits of the area under review, by the Millstone Grit mass of the Bowland Fells and the grit ridges of Pendle Hill and Elslack Moor.³⁽⁸⁷⁾ Like the low Triassic belt the region owes its origin to stream erosion on relatively soft rocks (Bowland shales etc), the softer shaly equivalents of the Yoredales and Great Scar Limestone to the south of the "Rigid Block".^{1(23,28)} Movements along the Craven Faults, downthrowing southwards, have also helped to increase the difference in elevation between the Craven Lowland and the Craven Highlands to the north.³⁽⁸⁸⁾

The region is thickly covered with glacial drift^{2(228),3(89),2(239),3(98)} like the Eastern Region and there are extensive alluvial spreads. Whereas the Eastern Region borders the Pennines, however, the Craven Lowland is a broad gap leading through them (above page 4).

The area is drained eastwards by the Aire, southwards by the Ribble, and westwards by the Wenning (a tributary of the Lune), with low watersheds separating their basins. The

general alignment of the Ribble above Halton West with the Aire below Coniston Cold (fig.n below) suggests that the present Upper Ribble may originally have been the upper portion of the Aire. This is supported by the "misfit" character of the present Aire, below Coniston Cold, now in a valley too large for a stream of its size, and the elbow bend of the Ribble (or former Aire) at Halton West is suggestive of river capture (fig.n below)



The probable history of the drainage is as follows. The area was originally drained largely by the Aire, which ^{out} cut its basin, and later the shorter and more vigorous Irish Sea streams, the Ribble and Wenning, working back or ²⁽²³⁴⁾ ~~back~~ ¹⁽²⁷⁻²⁹⁾ cut down along belts of soft rock, were able, by headward erosion, to lower the divides separating them from the Aire basin. This eventually culminated in the beheading of the Aire by the Ribble at Halton West. ³⁽⁹⁸⁾²⁽²³⁹⁾

Consequently there are the following valley routes leading to the centre of the Craven Lowland:-

- (a) Eastwards up the Wenning basin from Ingleton and Lunedale, forming a westward continuation of the Craven Lowland.
- (b) North-eastwards up Lower Ribblesdale from Lancashire.
- (c) North-westwards up Lower Airedale.

There are also passes leading eastwards through the Millstone Grit Pennines into Wharfedale, around Linton and Halton East ("Cracoe and Halton Gaps" Map 3), where headward erosion by tributaries of the Aire and Wharfe, along belts of relatively soft Yoredales rocks⁺ exposed in the hearts of the Hetton and Skipton anticlines. ¹⁸⁽¹⁰⁾ (Map 2), has resulted in wind gaps. The Craven Lowland gap through the Pennines is thus approachable from the east via Lower Wharfedale as well

+ or Bowland Shales etc.

as Lower Airedale.

In the Craven Lowland scenery depends even less on the "solid" geology than in the case of the Eastern Region. There is no structural feature comparable with the Magnesian Limestone escarpment and a further difference between the two regions is in the modelling of the drift deposits, which in the Craven Lowland is in the form of drumlins rather than moraines. Drumlins occur in other areas, notably in Upper Ribblesdale, but they are far more numerous in the Craven Lowland, and here, where the general relief is flatter, they dominate the scenery. The formation of drumlins in the Craven Lowland, on a scale unparalleled within the area under review, may be due to the accumulation on the lowland of an enormous mass of relatively stagnant ice coming down from the more steeply sloping upper Ribble valley. Eddies within the ice-streams possibly led to the moulding of the thickly deposited drift into drumlins, sometimes round a "solid" core.

It has been suggested by Raistrick that the drumline belt east of Long Preston and Halton West (fig. n above) may have aided the beheading of the Aire by the Ribble. The broad belt of drumlins probably helped to divert southwards the overflow of the glacial lake below Settle, caused by

the damming of the Ribble (the pre-glacial Aire) by the terminal moraine at Long Preston, and the Ribble has subsequently developed its course along the resulting overflow channel at Halton West (fig.n above).
10(264-266)

One effect of this capture has been to move the Pennine watershed eastwards (see drainage overlay on Map 1) so that it crosses the greatest width of the Craven Lowland and tends to produce a broad belt of rather uncertain drainage. There are also over much of the area numerous patches of swampy land in the hollows between the drumlins.
12(36)

B. Climate

The main facts regarding the climate of the area under review are represented on Map Sheet 8. As the area is relatively small, there is little variation in relation to the broader factors influencing British climate, such as latitudinal range or distance from the sea. The main factors responsible for differences in climate within the region result from the interaction of the moist westerly winds and general relief differences.

The driest and warmest climate occurs in the Eastern Region, with the least elevation and situated on the rain-shadow side of the Pennines. July temperatures almost reach ¹²⁽⁵⁸⁾60°F on the lower parts of this area and the rainfall is less than 30 inches over most of the region and on the lower parts of the dip slope to the west. Marked salients of drier conditions extend eastwards into the Pennines up the major valleys of Swaledale, Wensleydale, Nidderdale and Lower Wharfedale. The broad valleys of Wensleydale and Lower Wharfedale, approximately parallel to the directions of the prevailing winds, form particularly marked rain-shadow areas, with sunnier conditions, cutting into the wetter Pennine region. These valleys also have less snowfall than the Pennines. (Map 8c).

The Craven Lowland has the earliest spring in the area under review (Map 8d. Appendix 20), in view, perhaps, of its accessibility to mild sea winds from the west, and the high ground to the north giving shelter from the cold north-easterly winds of spring. The moist westerly winds, however, bring a heavier rainfall to this area, 35 to 45 inches a year, as compared with less than 35 inches in the Eastern Region, lower parts of the dip slope and lower portions of the major valleys cutting into these regions. More cloud, and also the slightly greater elevation of the Craven Lowland, combine to lower the summer temperatures a degree or so below that of the lower portion of the Eastern Region (Statistical Appendix 1). The difference in amounts of sunshine received by the two areas is probably much more marked. The increased cloudiness associated with the wetter climate of the Craven Lowland must seriously reduce the hours of sunshine. This is frequently noticeable in journeying from the one region to the other and is shown by a comparison of sunshine amounts at Giggleswick in the Craven Lowland and Harrogate (near the Eastern Region, (Map 8e Statistical Appendix 2).

The Yoredales Plateau and Craven Highlands receive a greater orographic precipitation than the Craven Lowland,

over 50 inches and over 60 inches annual rainfall in most parts. Even the major valleys of Upper and Middle Wharfedale and Upper Ribblesdale do not produce any marked rain-shadow effect here, since they are situated almost at right angles to the prevailing winds and have rainy slopes. The Pennines, except on the lower eastern side and in the deeper valleys, have the lowest winter temperatures and the greatest snowfall in the area under review. In addition to elevation, the mid-winter precipitation maximum, characteristic of most parts of the Pennines, tends to increase the snowfall.³⁽¹⁰²⁾

The lower temperatures caused by height and the longer snow-lying period delay spring growth on the uplands and in the higher valleys, where the growing season may be anything up to a month or more shorter than on the lower lands. This may be deduced from the temperature figures, allowing for elevation (Statistical Appendix 1), and it may be confirmed from the Phenological Reports. These show, for example, that at the hamlet of Oughtershaw^{*}, at 1200 feet O.D. at the head of Wharfedale, flowering times are three weeks to a month later than at Ben Rhydding^{*}, at 300 feet O.D. in Lower Wharfedale² (Statistical Appendix 3).

* these places are marked on Map 8e

C. Soils (Appendix 21)

The type and distribution of soils reflects parent materials, topography and climate. In the Craven Lowland and Eastern Region, where the solid rock rarely appears on the surface, the main factor influencing the soils is the character of the glacial drift. Thus the outwash plain has 9(367 foll, 374) sandy soil, whereas the boulder clay causes heavier soils. 12(55)

The alluvium and fluvio-glacial deposits are coarser grained, however, and lateral moraines, such as occur particularly in the Eastern Region ("Morainic drift" area), 12(54), 4(339) give many patches of gravelly (Appendix 22) or even sandy material, as, for example, on the Morainic drift-covered portion of the Millstone Grit Dipslope and on the Permian 139(22, 30) to the east covered by similar drift (Appendix 23).

In the Craven Lowland, where the drift is boulder^{clay} with 10(265), 12(55) less gravelly moraine (Appendix 24), the glacial drift soils tend to be more generally heavy, and certainly with the increased rainfall they are wetter and stickier here. c.f. 12(55)

Extensive alluvial spreads and river terraces, however, break up the pattern of boulder clay soils, and the soils of the region as a whole, if mostly wet and heavy, are 3(170) nevertheless rich.

In the Pennines, where the drift is more patchy, 4(333), 8(368 foll.)

soils are developed more on the harder "solid" rocks and are
27(288),3(107),9(237)
in general thinner, especially in view of rain-wash and soil
creep denuding the slopes. On the valley floors soils are
27(292,293),28(19),12(53)
deeper, due to the downwashed material accumulating, and
particularly in the major valleys, with alluvium and
fluvio-glacial deposits. Lower Wensleydale Foot, with
particularly extensive terraces, is characterised by light
29(24)
soils, whereas Lower Wharfedale, with numerous terraces, but
cut in the Sabden Shales, breaking up to form clays, has in
3(162)
general heavy soils. On the more elevated and wetter parts
of the Pennines, except on limestone, there is peat
3(115)
formation.

Each of the major divisions of the Pennines also has
distinctive soil types. The Great Scar Limestone, covering
extensive areas in the Craven Highlands, gives rise to
12(52)
light, well drained and alkaline soils, though these are
26(273)
too thin to plough. Similar soils occur on the limestone
outcrops of the Yoredales Pennines, but wet and acid soils
occur on the shales and sandstones so that the soils of this
12(54)
area are very varied. The grit bands of the higher parts of
the Millstone Grit Dipslope give rise to soils which are
3(107,108),140(29),12(53)
light and porous, but thin, hungry, and infertile.
The lower eastern parts of the Millstone Grit Dipslope,

4(304,334,338),3(162)
mostly covered with boulder clay, also have poor soils.
C.B. Fawcett, Charnock and others (in describing the
Pennine region) single out this area particularly as one
of infertile soils, due to sour and overwatered conditions.
142(267),27(288,292)
This adverse combination of soil conditions results from
the lack of limestone, the impermeable boulder clay
subsoils, and the flatness of much of the surface leading to
poor drainage (above pages 9 and 10), though eastwards
on the "morainic drift" of the Eastern Region, the evidence
of gravelly material suggests greater permeability (above
page 37 line 7 following).

Though here, to the east of the Pennines, soils depend
mainly on the drift, where the solid rocks do come to the
surface, as in places south of Knaresborough, they produce
marked regional contrasts. Here, in the Semi-Drift-Free
Magnesian Limestone Areas, light and, well-drained alkaline
soils contrast markedly with the wet and acid soils of the
3(96),133(225),27(288 foll)
Millstone Grit Dipslope to the west.

D. Natural Vegetation (Map 9)

The natural vegetation of the area is governed by all the other physical aspects; relief, climate and soils. It thus presents rather a patchwork in the area under review, with considerable variation in relation to differences in lithology, soils, elevation etc., but characteristic regional combinations of vegetation types occur. The poorest type of natural grazing, cotton grass moor, which tends to form acid peat, is associated particularly with the highest and wettest land. It therefore covers largest areas on the Yoredales Plateau and highest parts of the Craven Highlands, giving way to grass heath on the lower hill slopes and sheep's fescue pasture on the dry limestone soils.

These grass associations, though widespread in the Yoredales Pennines, are most extensive in the Craven Highlands with the widest limestone outcrops. Fescue pastures are most extensive on the sides of Middle and Upper Wharfedale.

The natural vegetation of the dipslope, and especially the Millstone Grit portion, is heather moor, which favours lower areas with less rainfall than cotton grass and is therefore more common in this semi-rain-shadow area (Appendix 25). On the Yoredales Dipslope heather moor is

associated with occasional strips of fescue pasture on the limestone outcrops and there is considerable variety of natural vegetation types.

E. Physical Divisions

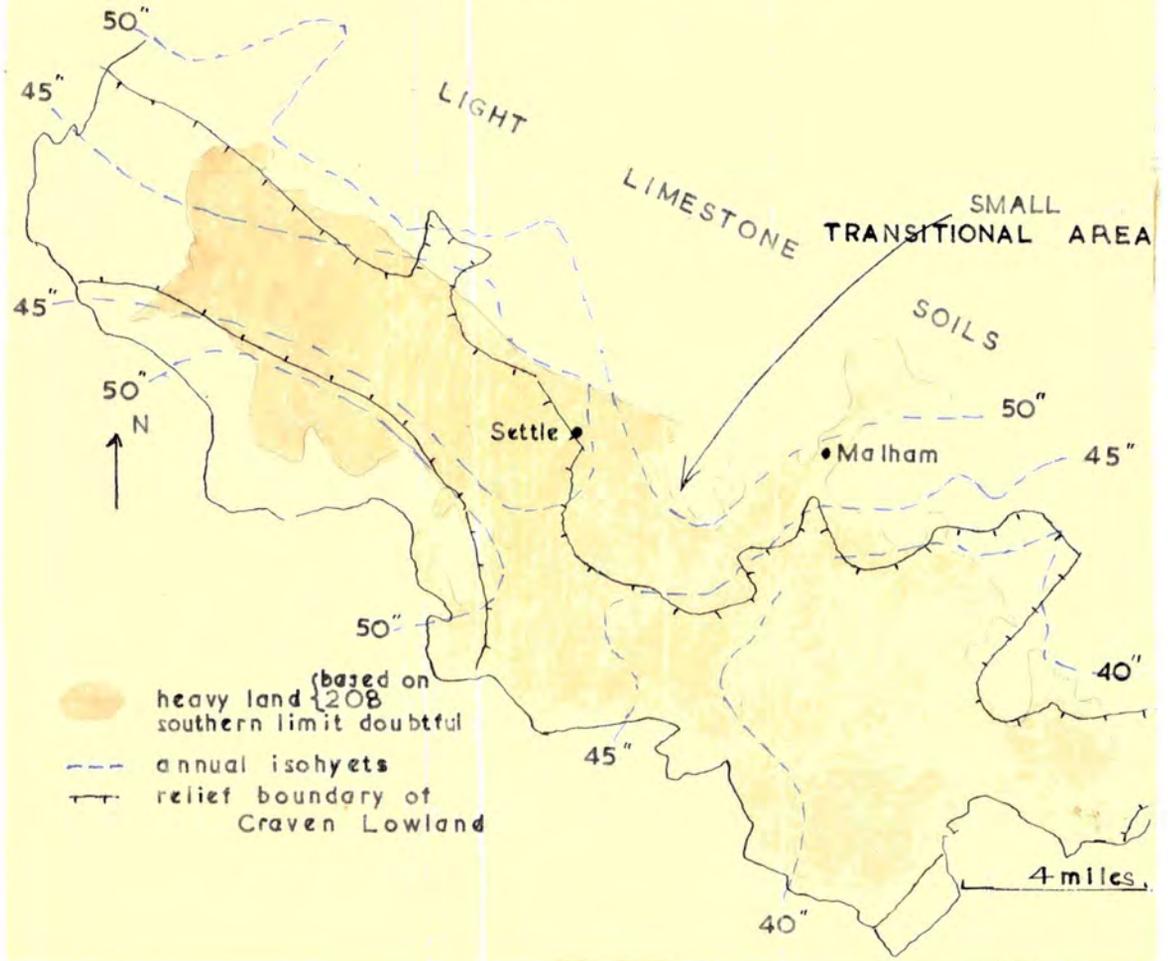
The map of physical divisions (Map 12) is based primarily on physiographic divisions, but also takes into account the other physical aspects such as climate, soils and natural vegetation.

In the Central Pennines the larger four-fold divisions (the "4 quarters") are as follows (Maps 10 and 11):-

- (a) The Craven Highlands characterised by light, dry limestone soils and the most extensive gramineous types of natural vegetation.
- (b) The Millstone Grit dipslope on the east with poor acid soils and heather moor.
- (c) The high Yoredales Plateau with the heaviest rainfall (over 60 inches annually) and the main areas of cotton grass.
- (d) The Yoredales dipslope with a mixture of vegetation types.

To the south of this Pennine area the Craven Lowland forms a well-defined physical division, reflected in soils and climate (fig. o below).

Fig o THE CRAVEN LOWLAND



The change from the heavy land on the Craven Lowland to the thin light soils of the Craven Highlands corresponds closely with the boundary between the two regions, apart from the small transitional belt between Malham and Settle, where the drift rises up the Pennine slopes. In spite of the heavy rainfall in the Craven Lowland, the bordering uplands on the north and south are reflected in a marked increase in rainfall amount, the 45 inches annual isohyet corresponding approximately with the borders of the Lowland, as does the limit of 30 days snow-lying on the north side (Map 8c).

These divisions of the Pennine area are admittedly a compromise between different criteria, necessitating the addition of transitional belts, but the regions do appear to have validity in terms of a variety of physical aspects.

In the case of the Eastern Region and major valleys, however, climate and soils do not yield sufficiently precise or easily obtained distributions to determine physical divisions, and there is no natural vegetation today.⁺ We therefore adopt the physiographic divisions and boundaries without any modification, since they are in fact the physical regions so far as can be determined in these cases.

The Major Valleys, with more alluvium etc. can be

+ except on the upper slopes of the valleys

classified as follows:-

- (a) The Wider Major Valleys of Wensleydale (subdivided into the Upper Dale, the wider Lower Dale, and the broad Lower Wensleydale Foot Region with very extensive alluvial deposits and light soils); Middle Wharfedale; Lower Wharfedale (with more alluvium); and Lower Nidderdale (pages 17-23 above).
- (b) The Narrower Major Valleys of Upper Nidderdale, Swaledale, Upper Wharfedale, Littondale, and Upper Ribblesdale (Appendix 26). Dentdale (minor area)
- (c) The Higher Valleys,[†] Upper Ribblesdale Head and Semerdale, more transitional to the ^{higher} Pennines. (above pages 15,16).

Since there ~~are~~^{is} such a large number of individual regions we have adopted a 2-stage division on Map 11, as follows:-

- (a) The Eastern Region with a thick boundary line and the smaller divisions of this area with thinner lines.
- (b) The Major Valleys outlined by a thick line and subdivided by thinner lines.

The Eastern Region and the Craven Lowland together may be referred to as the "Lowlands" (Appendix 27).

All these divisions of the area under review are admittedly approximate, but not excessively so. Moreover,

[†] For simplicity and to avoid referring to too many regions in the following account these minor areas are included in (b) above.

as will be shown, they are not unsound in relation to the other aspects of the human response, but are, on the other hand, completely fundamental to them.

II. MOVEMENTS OF PEOPLES AND THE SPREAD OF CULTURES IN
RELATION TO PHYSICAL CONDITIONS.

A. The Prehistoric and Roman Period

In spite of differences in climate to some extent, and certainly in vegetation, as compared with the present day, the spread of prehistoric peoples and cultures certainly showed a relation to the physical divisions of the area. During the relatively warm and dry Mesolithic period, when the area was first definitely inhabited (appendix 28), the pygmy flint makers spread chiefly on the limestone outcrops of the Craven Highland and the higher sandy parts of the Millstone Grit Dipslope, which were probably more open when the forests spread. ←

10(267),35(37),118(22,28 table),(Map 13)
33II (996),37(maps 143,145)

The colder and wetter conditions of the ensuing Neolithic period resulted in the seeking out of cave shelters in the limestone of the Craven Highland. (Map 14 Appendix 29). In the Bronze Age which followed, the warmer and drier climate enabled the use of lower areas, and movement was controlled mainly by the Pennine throughways, the Craven Lowland and Wensleydale, and also by the other major valleys. (Map 15).

The colder and wetter climate of the Iron Age, by

raising the water-table and leading to swampy conditions, tended to restrict the main spread of peoples and cultures again to the better-drained limestone areas of the Craven Highlands.
34(117 foll)

Thus in the prehistoric period, when the high water-table in the wetter periods, the valley swamps, and the dense lowland forests forced the people to live chiefly on the better-drained and more open upland. (Appendix 30), the broad divisions of this area (especially the "4 quarters") are reflected in the pattern of their movements and cultural spread. Differences between these regions in soils, drainage conditions and natural vegetation, were the main factors leading to the spread more in one area than another. The response was particularly to vegetation, as illustrated by the preference for the Craven Highland, with more extensive grasslands on the dry limestone outcrops. These grasslands no doubt encouraged the concentration of game (especially the herbivores) and subsequently provided
34(147)
better grazings for domestic animals, thereby attracting the people to this region.

Later colonists preferred the lower and potentially more fertile areas, ignoring the higher prehistoric sites.
34(148)
These were abandoned for all time, perhaps when the Celts

were driven westwards by the spread of the Angles from the east, a conclusion which would be in accordance with the virtual absence of Celtic place names. (Appendix 31).
90,91.

With the abandoning of the old upland sites, the response becomes less to the "4 quarters" of the Pennine area and more to the Lowlands and Major Valleys. We see the beginning of this in Roman times when villas were established on the lower lands and the fundamental difference between the lower Eastern Region and the higher Central Pennine region is expressed very strikingly in Haverfield's division into the Civil and Military Zones.
43(35 map) (Map 16)

The evidence of Roman Civil population, however, is confined to Catterick Bridge, a civil town near the eastern borders of the area, and no more than five villas. Most of the area comes in the Military Zone, with evidence chiefly of camps and roads. Such of the Civil Zone as occurs here is no more than a borderland verging on the Military Zone. In the area under review, therefore, the Romans were chiefly soldiers or miners, as the finds of pigs of lead may suggest, (map 16)¹⁰⁽²⁶⁸⁾ and do not appear to have been true colonisers or farmers in most cases. At least there is little evidence yet of deforestation in the lowlands.
135(521),150
35(map),44(map)
102
32(71,74),12(60f),45(106)

The Roman Period thus merely foreshadows the spread of peoples and farming on the lowlands and valleys. On the

+ folding map at end.

* opp. p. 214.

other hand this subsequent spread was assisted by the earlier building of a network of Roman roads which survived for centuries. These roads show some relation to the Eastern Region, between the Pennines and swampy Vale of York, and the Craven Lowland and Wensleydale Gaps, with camps and villas along these lines.

B. The Anglian and Scandinavian Colonisation.

The spread of peoples and farming in the lowlands and valleys, and the modern pattern of land use and settlement distribution, had its real beginnings in the Anglian Period. The true or animal drawn plough, enabling the tilling of the heavy lowland soils (Appendix 32), first came into general use at this time (Appendix 33) and the clearing of the lowland forests for cultivation really began. This is shown by the occurrence of Old English place names in "leah",⁺ which show a broad relation to the Eastern Region, Major Valleys and Craven Lowland. (Map 17).

The drier climate from 200 to 1200 A.D. may have made the lowlands easier to plough, but the main reason for the spread of cultivation here was the arrival of the Angles accustomed to lowland cultivation and deforestation. These peoples, from their homeland in the Schleswig region, approached via the Humber estuary and followed the Roman roads westward to the line of the Great North Road, or possibly moved North along this road from York. Place-names in "ingas" and "ingaham", regarded as indicating the earliest settled areas, occur in the lower eastern parts of the Eastern Region. (Map 18). Secondly "ingatun" and "ham" names, regarded as fairly early, are mainly limited to ^{the} Eastern

+ "forest clearing"

Region or neighbouring areas. (Appendix 34, Map 19).

Early Anglian archaeological remains are also largely limited to the same areas. There is thus considerable support for the view that movement was from the east and to the Eastern Region first. (Appendix 35).

Names of relatively late origin, such as those in "ley", "den" and "field" occur mainly further westwards, suggesting a subsequent spread in this direction from the eastern parts of the area. (Map 20). These names lie in the valleys, especially in the Major Valleys leading up into the Pennine area. The valleys were virtually the only lines of possible movement from the lowlands into the highland, with peaty uplands on either side presenting an obvious discouragement to deviation. Of all the valleys the Major Valleys were the easiest routes. This simple and obvious idea of movement by these valleys is further confirmed by the distribution of massed Anglian place-names, i.e. all the Anglian names mentioned in the place-name volumes. (Map 21).

The Angles apparently moved westwards in greatest strength from the Eastern Region along the ^{Wider} Major Valleys, especially the ones with Roman roads along them. There is little evidence as yet of much movement up Nidderdale which, though wide, had thick forests round its lower parts and swamps further eastwards. But in the wide valleys of

Wensleydale and Lower Wharfedale, the Anglian place-names are particularly numerous (Appendix 36) and Anglian sculptured stones have been found (Map 22, Appendix 37).

The Craven Lowland also has many Anglian place-names. There is, however, less evidence of cultural spread (sculptured stones) until Danish times, probably as this area, lying further from the Lowland Zone where the Angles came first, was reached later, possibly via Lower Airedale along which there is a line of "ing" place-names leading from the Vale of York.⁴³⁽¹¹²⁾

From the Craven Lowland the Angles spread northwards into the Craven Highlands along Wharfedale and Upper Ribblesdale. Movement was more up Middle and Upper Wharfedale than Upper Ribblesdale, judging by the number of Anglian place names, as the Wharfedale area has more natural routes leading into it with Anglian place-names along them, suggesting that they were much used. These routes include:-

- (a) The Lower Wharfedale route (via the Wharfe gorge) from the Vale of York.
- (b) The Cracoe Gap from the Craven Lowland.
- (c) The Bishopdale and Coverdale routes from Wensleydale. (Map 21)

The next importation of peoples and cultures occurred in the late 9th century and was Danish. The Danes from⁴³⁽¹³³⁾

across the North Sea apparently approached from a general easterly direction. ^{c. f. 35(203 f.)} Consideration of the distribution of their place-names. (Map 23 ^{showing the distribution of Danish testwords} such as those in ^{12(516), 90(xxii), 91(xxi)} _{"by" and "thorpe"}) suggests the following conclusion. Though less complete, the Danish pattern of spread was very similar to that of the Angles: a movement first to the Eastern Region and from here and the Craven Lowland up into the Pennines by the Major Valleys, especially the wider ones. The Lowlands and Major Valleys thus govern the whole pattern of Anglo-Danish movement and colonisation.

The next settlers, the Norwegians, came from Ireland about 918 A.D., landed on the west coast of Lancashire, in the Wirral and Chester area, and in Cumberland and Westmorland. ^{43(154 foll, 135), 68(92)} They then approached the area via the Lake District and Howgill Fells in the north. To the south they crossed Lancashire from the Wirral and entered the Craven Lowland via the Lower Ribblesdale route. From the west they entered ^{43(154 foll, 135), 68(92)} the Craven Lowland from Lonsdale, via the Wenning basin (Map 24). The natural routes leading into the Craven Lowland (above page 31) thus governed the Norwegian movements into the area.

Once they had arrived, however, these people, as the

late arrivals, were often forced merely to occupy the remnant areas left by the earlier Angles and Danes. They thus settled in the higher parts of the Pennines. These areas are thick with Norwegian names of minor settlements and surface features i.e. "breck", "gill", "slack" and "scale"⁴³⁽¹³⁹⁾ (Appendix 38), as shown on Map 24 compiled from the distribution of these place-name elements on the 2½ inch O.S. map.

In spite, however, of the barriers to settlement, and perhaps even to movement, constituted by the already occupied lands, there is some evidence of Norwegian movement in relation to physical conditions. In particular there are indications of the use of the throughways, the Craven Lowland (where many of the Old Norse place-names are probably of Norwegian origin) and Wensleydale. This valley, with its "open" head, has plenty of evidence of Norwegian influence other than of minor settlements. The archaeological evidence, for example, is indicative of movement down the valley and there are village names suggesting the same conclusion (Map 24, Appendix 39).

Thus the throughways, Wensleydale and the Craven Lowland, were important routes for all these peoples, Angles, Danes and Norwegians, and the regional pattern of the Lowlands and Major Valleys was clearly fundamental to all

these movements of peoples at the colonisation stage. This was before these people finally settled down and we could expect to find a definite regional pattern of farming and settlement. This stage was now virtually reached.

With the arrival of the last of these three sets of invaders, the Norwegians, the colonisation of the area from overseas was almost completed. The Norman invasion of 1066 involved relatively few people and hardly any new villages were established by them in the area under review. This is clear from the place-name evidence. Such villages as came into existence after the Conquest were due to the gradual spread of the native peoples, probably, in view of the fact that they have Old English or Scandinavian rather than Norman-French place-names.

III. THE HUMAN RESPONSE TO PHYSICAL CONDITIONS IN TERMS OF LAND USE.

A. The Subsistence Pattern of Farming Regions

1. The Domesday Survey

The first definite evidence of the regional pattern of farming, resulting from the colonisation of the area by the Angles and Norse and the gradual clearing of the forests by them, is provided by the Domesday Survey.

This survey, made only 20 years after the Norman Conquest, enumerates the carucates or units of agricultural wealth (Appendix 40). From these, represented in the form of a map (25), we may deduce the spread and broad variations in the general intensity of the farming. (Appendix 41), which in this subsistence period before markets, when all areas had to produce their own food needs, was almost everywhere of the mixed type. (Appendix 42).

A further indication of the extent of the farming is provided by distribution of the open-field system (Map 26), which also dates from Anglian times. (Appendix 43).

From this evidence it is clear that the spread of farming, as we would expect, reflected and emphasised the pattern of colonisation, with close relations, apart from a minor spread on parts of the lower dip slope, to the Lowlands

(Eastern Region and Craven Lowland) and Major Valleys.

As well as being natural lines of movement, these regions also offered better opportunities for the primitive farmer owing to:-

- (a) The fact of lower land here, below 800 feet, with a milder climate more suited to cultivation, whereas almost all the other areas were higher, with shorter growing seasons, apart from the Millstone Grit Dipslope with poor soils. (Appendix 44).
- (b) Rich soils, as in the Craven Lowland (above page 37) or the fact of gravelly or fluvio-glacial and alluvial soils, as in the Eastern Region and Major Valleys respectively (above page 37 fol).

The importance of the alluvium in the spread of farming up the Major Valleys was two-fold. It provided valuable water-meadows and would also, with the fluvio-glacial deposits, be more easily worked than the boulder clay (Appendix 45), which otherwise covers most of the lower parts of the Pennine region. Thus better soils, together with the fact of valley floor sites, explain the farming spread in the Pennines along the Major Valleys.

Soils were ^{more} even ~~more~~ important in the spread of farming on the eastern side of the Pennines and governed the selection of

the Eastern Region rather than the Millstone Grit Dipslope to the west. The western limit of the Eastern Region is reflected very strikingly in the distribution of Domesday carucates, and in spite of the fact that this boundary varies quite considerably in altitude and climate. There is evidence, from the mapping of glacial deposits, that the superficial material is gravelly and therefore more permeable and better drained to the east of this line than higher up the dipslope to the west, and not because of the underlying Permian (above page 39 line 9). This seems to find its reflection in the farming pattern of Domesday Survey times, with more numerous farms on the better drained material.

Thus the Eastern Region, though a composite area including a number of differing physiographic divisions, has validity and real significance, not only in the pattern of colonisation and movement, but in relation to the first farming regions of which we can find evidence. This is true at least over the greater part of its length and south of Wensleydale.

Further northwards the westward spread of farming up the dipslope seems to bear more of a relation to elevation as affecting temperature and growing seasons etc.,

corresponding more with the 600 foot contour than the western edge of morainic drift. (Map 25). It is in this portion of the area, however, that the evidence of the position of this boundary of the Eastern Region on the dip slope is least precise (above page 28 line 5). It could be that the relations to the morainic area (i.e. the Eastern Region) indicated by map 25 are in fact a good deal closer here than this map would suggest. (Appendix 46). At any rate and in terms of the criteria adopted here, there is a relation between Domesday farming and the Eastern Region, and if this is not always very close in the North, it is when we consider the area as a whole.

The spread of farming in relation to the Craven Lowland is an even more striking feature of the Domesday map. In spite of the extensive prehistoric cultivation of the Craven Highlands to the north, there is now virtually no upland farming here. On all sides the limits of the Craven Lowland, marked both by a change to thin soils and a sharp increase in altitude of the land and rainfall amount (above page 44), provided a considerable discouragement to the spread of farming, which was concentrated instead within the region and extended northwards only along the Major Valleys.

The most intensive farming, as judged by the greater

number of carucates, corresponded with the Lowlands together with the wider valleys of Wensleydale, Lower Nidderdale, Lower and Middle Wharfedale. These regions, the most outstanding areas of spread in the colonisation phase, had better possibilities for the expansion of farming than the narrower valleys of Swaledale, Upper Ribblesdale, Upper Wharfedale and Littondale. In addition to being wider, Lower Nidderdale and the eastern part of Lower Wharfedale, (both cut in the low eastern portion of the dip slope), are lower regions not unfavourable for cultivation even on their upper slopes.

It is probable that the poorer Pennine areas not mentioned in the Domesday Survey were as yet unoccupied (Appendix 47). They were later the Norwegian areas (Map 27), with almost purely Norse place-names in many cases (Lunds; 68(94) ⁹⁰ 23(17,18) Malham Moor; possibly Langstrothdale etc.) As these people approached the Pennines from the west, they had perforce to use difficult routes up the high western edges of the Pennines, negotiable only by steep valleys and high passes, whereas the Angles and Danes had used the long penetrating eastern dales, attracting and leading them on. Difficulty of approach, plus the fact that the poorer Pennine areas were less attractive for farming purposes, would explain why

they were probably unoccupied and, therefore not mentioned in the Domesday Survey. It was not until after the better lands elsewhere were fully taken up, (by which time the Domesday Survey had been made) that these poorer lands were worth occupying.

Until this subsequent spread of population "filled in" these Domesday remnant areas, there must have been a very real distinction between the Lowlands and Major Valleys, on the one hand, distinguished by settlements and farmlands, and the other parts of the Pennines in a wild state, only the remote upper parts of the Major Valleys being unoccupied (Wensleydale above Bainbridge⁺ etc). Never perhaps in the whole subsequent history of this area was this regional pattern of Lowlands and Major Valleys more clearly reflected in terms of the human response.

+ Marked on Map 79 b.

2. The Medieval Evidence.

In the Middle Ages farming and cultivation expanded considerably (Appendix 48). Indeed the Norman Period was particularly marked by the expansion of cultivation due to the pressure of increasing population up to the time of the Black Death. By about 1300 A.D. arable cultivation reached an all time record in its expansion into the waste.

43(178 foll)
59(146-147)

On the other hand the fundamental distribution of farming had not changed since the Domesday Survey times. This is shown by Kirkby's Inquest and Knights's Fees, which indicate the distribution of carucate holdings about 1300 A.D. (Map 28, Appendix 49) and further confirmed by other evidence such as the Yorkshire Inquisitions, which describe for about the same date samples from many parts of the area (Appendix 50).

100
56

The Inquisitions also contain references to areas of arable cultivation, as plotted on Map 29, and it is clear from all this evidence that the most intensive farming regions, with cultivation and mixed farming, were still the Lowlands and Major Valleys, particularly the wider ones as in Domesday Survey times (Appendix 51).

A possible explanation of the continuance of this pattern would be persistent geographical influences, these

being always the better areas for farming.

On the other hand there is another explanation, for from about 1100 A.D. onwards extensive portions of the area under review were designated forest or chase (Map 30, Statistical Appendix 13a, Appendix 52). In these areas there were restrictions on access (Appendix 53) and the spread of cultivation by clearing the natural vegetation, which provided cover for the game. ^{45(106f)} 54(34),45(107),55(80)c.f.43(188) Those with the power to designate these forests, the Norman lords, naturally chose the poorer and thinly populated areas which had been left when cultivation and mixed farming had expanded over the Lowlands and up the Major Valleys, as shown by the Domesday Survey. Later, owing to the legal restrictions imposed, the further spread of people and mixed farming into the poorer areas was thus prevented or greatly hampered. Consequently the distinction between the better and the poorer areas was perpetuated, with legal ownership and power superimposed to prevent or limit access and development of the forests.

This shows how geography affects the whole question of land utilisation by two stages:-

- a. The stage of free choice when the Domesday farming pattern was established.

b. The stage of compulsion when this pattern was rivetted firmly on the landscape by the whole weight of Norman power. (Appendix 54).

The only type of farming permitted to spread in the Pennine forest areas was a limited amount of pastoralism with hardly any cultivation in 1300 A.D. Some arable cultivation may have persisted in Nidderdale (the only major Domesday farming area to suffer from the forest laws, (Appendix 55)) and parts of the dipslope from Domesday Survey times, and tiny amounts may have spread elsewhere as a result of assarts.* But in the main the evidence of farming in these forests and chases is limited to occasional references to "herbage", "meadow" and pasture (Map 29) in the Yorkshire Inquisitions.^{561-IV}

Since all this does not represent such an intensive type of farming as that indicated by the numerous carucates and many references to arable cultivation in the Lowlands and Major Valleys, the distinctiveness of these, the Domesday farming regions, is still apparent and the only difference now is in the general increase in intensity over the area as a whole.

The regional pattern of farming, as it existed about 1300 A.D., can hardly have changed fundamentally in the later * clearing ground for cultivation (usually illicit)

Middle Ages, since the forest laws maintaining it, by restricting further spread of arable cultivation, still continued. Nor could a retreat of arable cultivation occur from the wetter areas whilst the subsistence economy prevailed and grain could not easily be purchased. The fall in population with the Black Death might have brought about some decline in cultivation, but this would be widespread in all areas and therefore not likely to alter the broad regional distribution of arable land, only the general intensity.

It seems unlikely, either, that the expansion of sheep grazing with the growing wool trade from 1350 to 1550 would alter the general distribution of arable land or mixed farming, since there would be plenty of upland grazings for the sheep and therefore not much need to change over ploughland to sheep grazing. In fact there is little evidence of this ever happening to any extent in the area under review. Such sample evidence as is contained in the Yorkshire Inquisitions for the reigns of Henry IV and V confirms the persistence of the regional pattern. (Map 31).

Thus the Domesday pattern of mixed farming distribution persisted in the Middle Ages, with the main mixed farming areas still corresponding with the Lowlands and Wider Valleys.

(Lower Wharfedale and Wensleydale, apart from the remote upper part of the upper dale above Bainbridge). Mixed farming elsewhere was mainly limited to the other Major Valleys (the narrower valleys of Upper Wharfedale, Littondale, Swaledale and Upper Ribblesdale).

B. The Regional Pattern of Farming for Profit

1. The Evolution of the New Pattern up to the late 18th Century.

After the Middle Ages farming underwent considerable changes. The evolution of the local corn market by the late 15th century enabled the farmer to buy grain, so ending the old necessity for self supply. In most of the old arable regions, with over 30 inches of rainfall and not well suited to grain growing under more modern economic conditions, this resulted in a gradual relaxation of arable, usually when the land was enclosed. In the north, where enclosure took place early, this change came very soon after the market organisation. By about the middle of the 16th century, according to Leland, not much arable land remained in the northern Pennine area and this is confirmed by the evidence of the Yorkshire Surveys in the early 17th century. (Maps 32,33, Appendix 56). A comparison of arable acreages in these Surveys with those in the Yorkshire Inquisitions provides further indications of this decline in cultivation. (Statistical Appendix 18a).

In the Craven Lowland there is evidence of arable land being turned over to grass in the 17th century, and by the end of the century, or at the latest by the latter half of the following century, most of this region was almost

entirely under grass. Some cultivation still persisted in the Middle and Upper Wharfedale area, probably on the porous limestone soils on the lower slopes, but this also largely disappeared with the building of the new roads in the 18th century, enabling grain to be more easily brought in.

The motive for these changes was greater profit. It is made perfectly clear in the General View of the West Riding in 1794 that the farmers considered that greater rewards could be obtained from grass farming in these wetter areas. This suggests that yields here had never been very reliable and that the reason for extensive Medieval cultivation had been largely the necessity for self-supply.

There is evidence of crop failures here in the Middle Ages, as at Sawley in the Craven Lowland (south of the area under review but with a similar climate and physical conditions), at Fors in Upper Wensleydale, and more recently at Carperby, all due to the too wet and cloudy summers. Also the general quality of the grain was poorer under wetter conditions, as in the Craven Lowland where oats were too thick-skinned and hard. Once alternative uses of the land were possible, the farmers therefore chose grass farming, better suited to the wetter conditions.

Arable cultivation persisted on a really important

scale mainly in the drier Eastern Region with less than 30 inches of annual rainfall for the most part, and more favourable soil conditions than the lower and drier parts of the Millstone Grit Dipslope to the west or Lower Wharfedale with cold clay soils developed on Millstone Grit Shales etc. In addition to drier and sunnier conditions, which must always have made for better yields from all the cereals, the drift soils, particularly as they are often gravelly, rather than truly clayey, (above page 37 line 8 fol. 29(177) 12(55), 29(24,42) tend to be more easily worked under drier conditions.

Evidence of this relation of arable farming to the Eastern Region, apart from the small portion with over 30 inches of rainfall, is provided by

- (a) Leland,⁷¹ towards the middle of the 16th century, giving a broad indication of arable distribution in the northern part of the area under review. (Map 32).
- (b) The General View of the Agriculture of the West Riding,^{72a.} 1799 which gives parish statistics for the area further south and from which divided circles showing the proportion of arable land have been constructed. (Map 34).

Admittedly, this is evidence from different dates and in different forms but there is no other data and if we superimpose one map upon

the other (Map 34) the relations of the arable farming to the Eastern Region, though broad, can be easily seen.

Some arable cultivation, though not comparable in amount, also persisted in the Major Valleys after Medieval times, particularly the wider ones. These wider valleys, forming the main lowland corridors leading up into the Pennine area, with easily worked alluvium etc. and with marked rain shadow effects, still formed the main salients of arable farming penetrating the Pennine uplands after Medieval times.

Evidence to this effect in the case of Wensleydale is provided by the Yorkshire Surveys made in the early 17th century and in the case of Lower Wharfedale by the General View of the West Riding (Maps 33,34). Even by the end of the 18th century, Lower Wharfedale, with less than 30 inches annual rainfall, still retained a considerable amount of land under the plough, almost rivalling the arable region to the east.

There was less arable land in Nidderdale by the end of the 18th century, but there was on the other hand an emphasis on dairying, favoured by physical conditions and further stimulated by the local needs of the dense population of textile workers and lead-miners, who acquired small holdings for cattle. This system was apparently an intensive one. There was "scarcely any stock other than

milk cows", the land was all enclosed in small grass farms, and considerable quantities of butter were being produced for sale outside the area. Even if there was little arable cultivation at this time, with so much dairying, the region still formed an outstanding farming area penetrating the Pennine moorland.

Thus the wider valleys, as well as the Eastern Region, were still reflected in the spread up into the Pennine area of the more intensive types of farming after the end of the subsistence period.

Some spread of cultivation and cattle farming also occurred between these valleys on the lower and drier part of the Millstone Grit Dipslope. Such a spread, for example, was consequent on the disafforestation and enclosure of Knaresborough Forest in 1775 and the building of the turnpike road across this area from Knaresborough to the important grain market of Skipton. In this area, however, with infertile soils and a more bleak and exposed situation than the valleys, it was a much poorer type of farming. Reclamation was slow and patchy and often only partially successful. There was often so little return on capital that land was hard to let (Appendix 57). The amount of land under the plough was markedly less than in the Eastern Region

with better land, and arable cultivation was more intermittent. (Alternate Husbandry-Appendix 58).

On the higher and less accessible Dipslope further north, there is no evidence of any better farming (Appendix 59) and indeed this would seem most unlikely.

Therefore the spread of farming up the Dipslope from the Eastern Region, between the Wider Valleys, did not result in these farming areas losing their identity, since they could still be distinguished by a more intensive character.

By the end of the 18th century there is evidence that the Craven Lowland also was still a distinctive farming area. It was an extensive grassland area (Map 34), with little waste, as is clear from parish samples in the General View of the West Riding (Gargrave, Broughton). ^{72a(App.10(91,112))} In addition ^{72(109,20)} the grass was very rich, as at Skipton and Settle. Cattle have priority over sheep today on the best lands, probably because they represent a more intensive and profitable type of farming (Appendix 60). It would seem likely, therefore, that the Craven Lowland was a cattle area and in fact, in the portion described in the General View, the emphasis was ⁷¹⁽⁸¹⁾ on cattle with few sheep. This sample area was quite large ³⁽¹⁷⁰⁾ and it is not too much to assume, as does Beaver, that the

region as a whole was distinguished by cattle grazing from the less intensively farmed Pennine area to the north, which was chiefly moorland devoted to sheep grazing. ^{72(14,32,108)} (Appendix 61).

Therefore after the Middle Ages we still find that the Lowlands and wider Major Valleys were clearly reflected in terms of farming. The final disappearance of the old forest restrictions, which had maintained the broad original pattern of farming distribution, produced no marked change here, nor did the decline in ^{arable} cultivation. These farming regions, reflecting changeless physical conditions, still continued to exist, and Nidderdale, which had been restricted, once again emerged as an outstanding farming area after the forests came to an end. With the reappearance of Nidderdale amongst the farming regions, the fundamental Domesday pattern would have been once more complete, were it not for the lack of evidence of the lesser of the Major Valleys.

These narrower valleys (^{Littondale,} Upper Wharfedale, Upper Ribblesdale, Swaledale and Upper Nidderdale), with less land suitable for cultivation, may always have been more ^{52(18),138(90)} dependent on pastoralism, particularly sheep grazing. With the growth of this enterprise in the late Middle Ages and Tudor times, and the subsequent relaxation of arable

cultivation, they probably became mainly sheep areas.⁺
As a result of this decline in farming intensity they do not yield the kind of evidence in the General Views etc., that will bring out the differences here.

This does not mean that these lesser valleys now exerted no special influence in Pennine farming. Indeed the importance of the other Major Valleys, differing only in respect of width, suggests that this is most unlikely.

The only real difference, as compared with the Middle Ages, was in the increased regional contrasts. The old unspecialised mixed farming economy had given place to the concentration of more specialised types of farming in the areas most suited to them. This is seen in the relation of arable farming to the Eastern Region and, to a lesser degree, to the Lower Wharfedale area. It is also possible to distinguish further between the cattle areas. For example, the Craven Lowland, with a wetter climate, had little cultivation surviving as compared with the drier regions to the east. (Map 34). Geographical influences were becoming of greater, not of lesser importance under profit farming, with the urge to develop land in relation to its possibilities so as to obtain greater profits.

+ The same may have been true of Middle Wharfedale, with extensive fescue pastures particularly suited to sheep.
52(20)

2. The Persistence of the New Pattern of Farming Divisions and the Present day Land Use Regions.

(a) Arable Farming and the Arable Region.

After the 18th century the new pattern of farming regions, based on physical conditions, tended to persist in spite of marked changes in prices and general economic conditions.

These changes produced pronounced fluctuations in the extent of arable cultivation. During the Napoleonic Wars, the high corn prices, aided by the great enclosures taking place about this time, ¹²⁽⁹⁸⁾ caused a considerable westward expansion of arable farming up the dipslope. ¹²⁽⁹⁸⁾ A second westward expansion resulted with the high prices of the years from 1850 to 1870, when the food demands of an ever-growing industrial population on the coalfields, reached ^{12(95),30(73 foll)} their greatest under home production. (Appendix 62).

Such expansions, however, affected the intensity and absolute limits of arable farming without really altering the extent of the main arable region, governed by physical conditions. However high the prices rose the most intensive arable cultivation still corresponded approximately with the Eastern Region, with less than 30 inches of rainfall. The transition westwards to steeper slopes, or wetter, cloudier and cooler conditions in the dales; and to poor

soils on the Millstone Grit Dipslope, was always marked by a pronounced decrease in the proportion of land under the plough. This is shown, for example, by the 1870 Agricultural Returns (Map 35, Appendix 63).

The decline in ^{arable} cultivation during the competitive period which followed ^{30(74 foll)} (Appendix 64) was more apparent on the dipslope with poor soils than in the Eastern Region. This tended to emphasize the broad relation of arable cultivation to this ^{Eastern} Region, as is shown by the Land Utilisation Survey maps for the 1930's. Only the relatively small portion of the region with more than 30 inches annual rainfall had little cultivation (Map 36) and in the south there is a marked concentration of arable on the semi-drift-free Permian belt. Here, on the light and easily worked soils developed on Magnesian Limestone and ⁴⁽³³³⁾ on the thin and perhaps drier clays overlying it, south of Knaresborough, an almost purely arable system of farming prevailed. There was such a marked decrease in the amount of land under the plough on the dipslope to the west with poorer soils (above page 39 line 15) that the Permian outcrop can be picked out quite easily from the amount of arable on the Land Utilisation Map.

With the encouragement given to arable cultivation

during the last war there was again a spread westwards up the dipslope and lower dales. In spite of these changes, however, the most intensive arable cultivation today still corresponds broadly with the Eastern Region (Map 37, Appendix 65). Parishes with over half their farmland under the plough, and which may therefore be regarded as truly arable parishes, show an approximate relation to this area, except in the small portion where the rainfall is over 30 inches (Map 38). The same regional pattern is seen in the distribution of wheat and barley which prefer drier and more easily worked soils, whereas oats, which can stand cooler and wetter conditions, spread further westwards up the dipslope (Maps 39-47).

Some crops are almost entirely limited to the Eastern Region today, for example sugar beet (Map 48), and under competition beef production has also tended to be concentrated in this Eastern Region. This became apparent by the 1930's and it is still true today as a result of :-

- (a) The general decline in beef production in most areas, due to foreign competition and the modern emphasis on the very profitable milk production.
- (b) The survival of beef production chiefly in association

with arable cultivation because:-

- (i) The limited demands on labour appeal to the farmer who already has little labour to spare from arable enterprises.
- (ii) Feeding provides an alternative means of marketing arable produce.

The Eastern Region thus forms a well marked land use division. This fact may be further brought out more clearly on Map Sheet 50, which shows how all these various distributions may be correlated and by generalising it is possible to define the Arable Region (Map Sheet 51, Map 51a). This corresponds fairly closely with the Eastern Region, apart from the relatively small portion with over 30 inches annual rainfall which, if the "morainic drift" limits could be determined accurately, might well be shown to be a good deal smaller still (above page 60 line 5 fol.).

The Arable Region is also represented on the official map of "Land Classification" as the area of best land in the region under review for the purposes of arable cultivation (Map 51b). Admittedly this is merely inferred from the pre-war land utilisation, but at least it shows that the compilers of this map regard the area as distinctive just as we do. (Appendix 66).

Transitional areas occur along the borders of the Arable Region (Map 51c):-

- (a) The Harrogate - Harewood Transitional Arable Region corresponds broadly with the lower portion of the Millstone Grit Dipslope and Lower Wharfedale north of Harewood, with less than 30 inches of rainfall. There is as much arable cultivation as ⁱⁿthe Arable Region, but with poor soils ^{*} there is less emphasis on wheat and barley and more on oats.
- (b) The Lower Wensleydale Foot Transitional Arable Region, with slightly more rainfall, has a little less cultivation but is marked by an emphasis on wheat and barley rather than oats (Map 50b). This may be related to the existence of light soils, easily ploughed, and well suited to cultivation, both in the Lower Wensleydale Foot (above page 38 line 6 fol) and in the Bedale Beck Valley to the north where there are numerous gravelly moraines, i.e. in the whole Lower Wensleydale Foot Region as defined above (page 15).

Both the transitional areas (like the Arable Region) have most of their land in farm buildings (Map 52,53) and have a good labour supply (Maps 54,55) and relatively large farms (Map 56).

* except for the alluvial and fluvio-glacial soils
beside the River Wharfe

(b) The Pastoral Areas

After 1794 the general pattern of land use west of the Arable Region continued to reflect the Major Valleys and Craven Lowland. This is seen, for example, from the evidence of the Prize Reports and Caird, about the middle of the 19th century.

By 1870, according to the agricultural returns for that year, there had been a decline in the relative importance of arable cultivation in some of the Major Valleys, such as Wensleydale, with the further concentration of arable farming in the drier regions (Map 35 c.f.33). Even so, the actual amount of arable land was greater in the Major Valleys, particularly in the wider ones, than in most parts of the Pennines. (Map 57). The Wider Valleys and the Craven Lowland, with more alluvium and richer grazings, had the highest cattle densities (Map 58, Appendix 67).

With the fall in prices under competition, arable cultivation declined further in the dales (above page 77 line 5). There was also perhaps some decline in the importance of cattle grazing, more expensive in labour and feeding costs than sheep (Appendix 68). In spite of this the dot maps of cattle distributions, contained in the Land of Britain Reports, made just before the war, again show

the highest densities corresponding with the Craven Lowland and Wider Valleys.

This reflects the distribution of permanent grass (Map 9), corresponding particularly with these regions as the more extensive areas of lower land (Appendix 69) together with the lower part of the Millstone Grit Dipslope. Here however with poor land there was greater tendency to revert back to rough grazings under agricultural depression (Appendix 70) and cattle densities were lower (Statistical Appendix 23).

The Land of Britain Reports also suggest that the Narrower Major Valleys, though less intensively farmed than the Wider Valleys, and more concerned with sheep grazing (above page 74 line 18fa), were more important farming areas than other parts of the Pennine sheep area with less alluvium etc. The Upper Wharfedale and Upper Ribblesdale areas, for example, had exceptionally large numbers of sheep, especially Upper Wharfedale with more extensive fescue pastures. The lower part of Swaledale, with a drier climate, had a small salient of cultivation extending up it (Map 36).

During the last war the emphasis on milk production to maintain the nation's health led to an increase in cattle

densities in most areas and this was especially apparent in marginal areas with poor soils such as the lower Millstone Grit Dipslope.

Apart from this area, however, the greatest emphasis on cattle (Map 59) and the highest cattle densities in the pastoral area (Map 60) still correspond today with the Wider Major Valleys and Craven Lowland, where physical conditions are the most favourable (above page 8(line 13 fol.)). Moreover in spite of the fairly high cattle densities on the Millstone Grit Dipslope, the highest densities correspond broadly with the Wider Major Valleys cutting into this area (Map 61).

If we place the dots representing cattle on the lower ground in each parish (Map 62) (a proceeding which is justifiable since the cattle are obviously going to be here on the permanent grass), the concentration of cattle in the Wider Valleys can be brought out more clearly. This is clearer still if we convert the dot map into one of layer densities (Map 63, Appendix 71)

This layer density map also shows that after the Craven Lowland, Wider Valleys and Dipslope, the cattle were concentrated mainly in the Narrower Major Valleys. Thus the modern evidence shows that even these lesser Major

Valleys are still reflected, as they were in the subsistence period, by more intensive farming.

The same broad regional pattern seen on these cattle density maps is reflected also in sheep densities (Map 64), the spread of arable cultivation (Map 37), and the modern development of liquid milk production (Map 65), which is today replacing the old stock rearing. 138(186), 12(101-102), 3(164 foll, 133 foll, 162), 78(26).

Collating all this data, indicating the areas of more intensive farming, we may broadly define and classify the present day pastoral regions. The collated distributions are shown on Maps 66 and 67, and generalising from these we obtain the More Intensive Pastoral Regions seen on Map 68 (Appendix 72) with more cattle and stock generally, more cultivation etc.

The superimposition on these divisions of further data (Map 69) enables us to divide them into (Map 70):-

- (a) The Major Areas of More Intensive Pastoralism, corresponding with the Craven Lowland and ^{Major} Wider Valleys, and marked by more arable cultivation and the highest cattle densities. These areas may be termed the "Cattle Regions."
- (b) The Minor Areas of More Intensive Pastoralism (the Narrower Major Valleys) less intensively farmed than (a)

though more intensively than the Sheep Region with few cattle, corresponding with the poorer Pennine area.

These regions and their classification epitomise the whole history of farming west of the arable regions. In the subsistence period this pattern was reflected in arable cultivation (above page 57 line 17 fol.). The only changes have been :-

- (i) The decline in relative intensity of farming compared with the Eastern Region, when arable cultivation was relaxed.
- (ii) The increase in intensity of farming on the Lower Millstone Grit Dipslope due to high prices and aided by new techniques of farming enabling the increased use of poor soils.

The decline in relative intensity (i) may well be a false impression, since the drier Eastern Region must always have had more reliable crop yields and greater productivity as it has today. The increase in intensity on the dipslope does not change the regional pattern, since the Major Valleys cutting into this area can still be separated as more intensive farming areas, with more cattle and more dairying.

Within the basic farming regions, as shown on Map 70,

~~and which are timeless~~) modern regional specialisation under commercialism and competition has emphasised further differences. Thus the most outstanding dairying area today corresponds with the rich soils of the Craven Lowland Cattle Region, with early springs and very accessible to markets (Map 71). This area is also distinguished by the highest stock densities (combined cattle and sheep densities (Appendix 73, Map 72)) as it probably has the best land in the pastoral area (Appendix 74). It compares with the arable region in the high proportion of land in farm holdings (Map 52), its good labour supply (Map 54), and large farms (Map 71) which resulted from the amalgamation of farms with the changeover from arable to grass before 1794.⁷²⁽⁸⁰⁾

The region still has less cultivation than areas to the east, with a drier climate, though with the use of tractors to plough the heavier and wetter soils this contrast is less marked than formerly.⁸⁴⁽⁴⁹⁾ The Middle Wharfedale Cattle Region is really transitional to this area.

Apart from the greater arable cultivation in the drier valleys of Lower Wharfedale and Lower Nidderdale, differences between the cattle areas corresponding with the Wider Valleys chiefly reflect position and access to markets.

Whereas the Lower Wharfedale Cattle Region is a milk - producing area supplying the adjacent West Riding industrial area and the large towns within the ^{Wharfedale} region, Wensleydale, relatively remote from marketing areas, is characterised by the survival of a traditional cheese making industry on a modern factory basis (Appendix 75).

The Upper Wensleydale Cattle Region, though with fewer cattle than the broader lower dale, a greater emphasis on sheep (Map 59), and less arable with a wetter climate (Map 69), is nevertheless distinguished from the lesser Major Valleys by a greater emphasis on liquid milk production (Map 69).

The Millstone Grit Dipslope Cattle Region, which extends up the dipslope to about 800 feet, rivals or even exceeds some of the Wider Major Valleys in its cattle densities (Maps 60,62) and has more cultivation (Map 37). This region of poorer soils has, however, a more disturbed agricultural history (Appendix 76), less dairying (Map 65) and a lower assessment on the official map of Land Classification (Map 73), on which the better land (A and B types) correspond with the rich soils of the Craven Lowland and the Major Valleys with more alluvium for rich grassland (Appendix 77).

Essentially it is a marginal area ("The Millstone Grit Dipslope Marginal Cattle Region"), the biggest fluctuations in land use having corresponded with this area. It is outstanding only during periods of high prices or national need and is otherwise a poorer area probably than the other cattle regions. Before the war it was the poorest farming area in the West Riding ³⁽¹⁶²⁾ (Appendix 78). The Yoredales Dipslope to the north (west of the Eastern Region) is higher and has probably always been devoted mainly to sheep farming.

This is the present day pattern of farming regions. Admittedly ~~they are~~ ^{it is} a generalisation but this is not so wide as to lead to marked discrepancies between different criteria and involves at most such narrow transitional belts as are not worth indicating on the scale adopted here. The broader outlines at least of this regional pattern may be expected to affect the type and distribution of settlement in the area and it is through the medium of the economic activity that the physical conditions govern the whole social response, as it is hoped to show.

IV. REGIONALISM IN SETTLEMENT IN RELATION TO ECONOMIC AND PHYSICAL FACTORS

A. Classification of Settlement and Aspects Reflecting Regionalism

Settlements may be classified in relation to:-

- (a) Function (farming, quarrying, industry, commerce etc.)
- (b) Pattern (nucleated, dispersed)
- (c) Size of agglomerations, density of population.
- (d) Morphology (plan of villages and farm buildings, architecture, building materials)
- (e) Site, including relation to water supply.

From the point of view of regionalism we are not greatly concerned with some of these aspects. Function is not easily established, since statistics regarding occupations are not available on a village basis, but only for rural districts. These are too large to reflect regional differences on the scale proposed here. In any case the whole area may be described as agricultural, with widely scattered quarrying. There are occasional textile mills, chiefly in Lower Wharfedale and the Craven Lowland, as these areas lie on the fringes of the textile manufacturing area of the West Riding and Lancashire, but few industrial towns occur, only Skipton^x and Otley^x (Statistical Appendix 26), and the area is predominantly rural, as shown

x Marked on Map 89

by official descriptions (Appendix 79), the division into Rural Districts etc. According to the 1931 Census of Occupation tables agriculture is the chief occupation (Statistical Appendix 27). The only exception is the Settle Rural District where numbers in industry slightly exceed numbers in agriculture, due largely to textile manufacturing and quarrying. These occupy an insignificant portion of the Rural District and some quarrying is a normal feature of rural areas.
124(33)

It does not seem likely that function has been greatly different in the past, apart from lead-mining in one or two districts. Industrial towns are features more of the modern world and the area has always been mainly a farming region. Not much basis for regional division in terms of function exists in the area under review, apart from the lead-mining areas in the past and the Lower Wharfedale region today, with industries and residential development.

There is insufficient evidence on paper for the investigation of the significance of sites of villages but it would appear that villages are situated on moraines, alluvial fans, and at tributary valley junctions etc. Since these are common to most areas rather than related to particular regions this aspect hardly seems worth pursuing

further.

Similarly the availability of water-supply does not seem to be an important factor in the siting of villages. There is a conspicuous lack of spring-line settlements with the possible exception of Cold Cotes and Newby on the borders of the Craven Highlands, and some isolated farms between Ingleton^x and Clapham^x and on the western side of Chapel-le-dale⁺. These few examples hardly lead to any broad conclusions, since they are relatively unimportant in the total settlement of their area. Most of the villages in the area obtain their water supply from springs and bore holes, but the location of these sources does not influence village sites at present. There is plenty of water supply in the region and as long as there is a spring higher up, village sites depend on other factors such as the occurrence of patches of gravel etc. Nowadays the water is conveyed down to the villages in pipes, often over considerable distances.

Admittedly these factors may not always have obtained in the same way but there is little evidence in the past of the availability of water supply being an important factor in the siting of villages. Before the days of pipes and taps villages probably depended on local wells but these

Greta Valley

x Marked on Map 87 + Section Sheet C.

can hardly have governed sites. The numerous springs throughout the area show that the water-table is often near the surface and there is little reason to suppose that adequate supplies of water could not be obtained from it in most places.

The only definite instances of "site" really being a regional factor are in the relation of villages to the sands and gravels on the outwash plain, and in the very broad association of hill sites with the Millstone Grit Dipslope, possibly due to the immature dissection and the tendency in some cases to settle on the ridges or spurs in preference to the narrow valleys with floors too narrow for building on and probably liable to flooding. These hill sites, however, show little real relationship to other aspects of settlement. A variant of the hill site is the limestone terrace site in Wensleydale but this is only used by the smaller and less important settlements.

Since, apart from the odd instances, site and function are either irrelevant to regional divisions, or cannot be readily or unequivocally determined, settlements must be classified in other terms, such as size, form and pattern.

Not even all aspects of pattern bear much relation to

regionalism. There is no such thing as purely nucleated or entirely dispersed settlement except over very limited areas today. Settlements are of the mixed type and mainly in agglomerations, often with no very considerable variations in the relative proportions of the nucleated and dispersed elements.

Most aspects of settlement morphology can only be studied in the present or for relatively recent times. There is a paucity of early plans or other documentary evidence considering the number of villages or size of the area. At least it would be extremely difficult to obtain access to sufficient documentary material of this kind on which to base any definite conclusions.

All these aspects (function, pattern, site and morphology) cannot be neglected but there must obviously be more emphasis in the present work on other considerations, such as distribution and size of settlements and density of population in relation to economic and physical factors.

B. Regionalism in the Distribution and Size of Villages in the Subsistence Period.

The earliest indication of the pattern of settlement distribution is provided by the Domesday Survey, when vills, i.e. villages, like the mixed farming, probably corresponded with the better and more accessible Lowlands and Major Valleys, with an absence or virtual lack of population in other remoter and poorer parts of the Pennines, with no evidence of farming (above page 51f, Map 74).

After the 11th century there is evidence of some spread of population into these regions, which were forests and chases (above page 64) e.g. references in the Early Yorkshire Charters of the 12th and 13th centuries to the establishment of vaccaries. ^{62v (345)} This spread of population was, however, necessarily limited. The restrictions on access to the forests and chases and the limitations on the spread of farming, except for the thin spread of pastoralism (above page 64f), prevented any large scale movements of people into the forests and restricted the building of villages. The ban on settlement in the forests and chases was not absolute, since permission was granted for vaccaries to be built, but at least penetration was severely controlled and limited to small numbers.

Certainly it is clear from documentary evidence that

there had not been very much movement into the forests in the early Middle Ages. The Early Yorkshire Charters of the 12th and 13th centuries contain some indications to this effect (Appendix 80). According to the Yorkshire Inquisitions for the late 13th and early 14th century (and other sources) forest settlements were vaccaries, lodges and monastic granges, i.e. small hamlets and isolated farms based on pastoralism (above page 65). Thus by the 14th century the main spread of population and villages was restricted, like the expansion of arable cultivation on which it was based, to the already established Lowland and Major Valley areas, as the Nomina Villarum of 1316 and the 1379 Poll Tax for the West Riding both show (Maps 75, 76), with little spread of these bigger settlements into the forests being permitted (Map 77, Appendix 81).

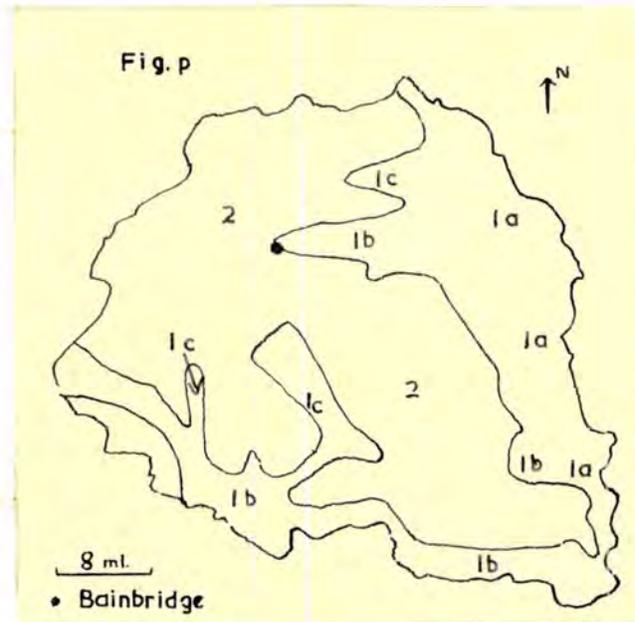
In short the Domesday Settlement pattern (like that of the farming) was rivetted upon the landscape by the force of legal ownership and power, except in one case (Nidderdale) where the laws tended to restrict further village growth in an originally important settlement area.

Differences within the village area, mainly free from forest laws, were a direct response to farming and physical conditions. The largest villages grew up in the more

intensive farming regions with more carucates viz. the more fertile and accessible Lowlands and Wider Valleys, Villages with over 60 taxpayers in the 14th century corresponded mainly with these areas and villages with over 100 taxpayers were almost entirely limited to these regions (Maps 76,78, Appendix 82).

In the Eastern Region, with better crop yields (above page 69f), food supplies were sufficient to support towns: Richmond, Ripon and Knaresborough^(Map 75). These, the only towns mentioned in the Nomina Villarum; (Statistical Appendix 28), owed their growth to functions of administration and ^{70 (App. 1), 112 (47)} marketing (Appendix 83) for which their situations, where the Major Valleys open out into the Vale of York, were particularly favourable.

We can thus divide the area into the following settlement regions in the 14th century (fig.p below):-



1. Villages area (Lowlands and Major Valleys)
 - (a) with towns - Eastern Region
 - (b) with large villages - Craven Lowland and wider valleys of Lower Wharfedale and Wensleydale (up to Bainbridge) etc.
 - (c) with small villages - Narrower Major Valleys of Upper Wharfedale, Littondale, Swaledale, and Upper Ribblesdale.
2. Hamlets and isolated farms area (poorer and remoter

Pennines)

This is only a very approximate division of the area, particularly between the larger and smaller village areas, but evidence of settlements at this early period is necessarily incomplete and indicative rather than precise.

C. Population Trends After the 14th Century in Relation to the Pattern of Settlement Distribution

After the Middle Ages the biggest increase in population probably occurred in the forests and chases as restrictions on access and the spread of farming gradually disappeared, particularly after the decline in hunting in the 15th Century. ⁴⁵⁽¹²⁶⁾ Other factors would also encourage an increase in population in these forest regions. There was the spread of lead-mining and cottage industries, and the improvement in communications suggested by the numerous references to bridge-building in the forests in the 16th ⁴⁵⁽¹²⁶⁾ and 17th centuries.

Evidence of this increase in population is provided by the numerous records of house-building in the forests ⁴⁵⁽¹²⁶⁾ during these two centuries. Other indications are the increase in the value of places in the forests, as in ^{79(217 foll)} Barden Forest between the reign of Edward II and 1612.

There ~~is~~ ^{are} also some statistical data in support of these conclusions. A comparison of the sizes of settlements as shown by the Yorkshire Surveys ⁷⁷ of the early 17th century and the Yorkshire Inquisitions ⁵⁶ about 1300 A.D. suggests an increase in population in various forest areas of the North Riding (Map Sheet 79).

Nevertheless we would not expect the forest settlements

to grow as big as the villages of the better Lowlands and Major Valleys, with more intensive farming and better communications according to the evidence of early maps, e.g. Moll's map of 1724 (reproduced as Map 80, with forest boundaries added, and also below, with boundaries of Lowlands and Major Valleys added in grey)



In fact we find numerous indications that the larger settlements remained associated with the Lowlands and Major Valleys (especially the wider ones) where

population also grew (Statistical Appendix 33).

Indications of bigger agglomerations here are as follows:-

(a) The Feet of Fines for the Tudor period suggest that the biggest agglomerations still occurred here where there is more frequent mention of cottages, messuages etc. ¹⁰⁶

(Statistical Appendix 34).

(b) The evidence of Tudor market towns is chiefly in these areas. Leland mentions as market towns Richmond,

Knareborough, Middleham, Masham, Wensley, Bedale and
71 I-III (79-86) VII-VIII (25-30)
Grinton.⁺ These are all situated in the Eastern Region,

Wensleydale and Swaledale. According to the Feet of Fines (Statistical Appendix 34) Skipton^x on the Craven Lowland and Otley^x in Lower Wharfedale were boroughs. ^{106(240,275)}

(c) Early surveys provide further evidence of the continued association of bigger agglomerations with the more fertile regions. The surveys relating to the North Riding Pennines at the beginning of the 17th century strongly suggest that Wensleydale's villages were bigger than those of the bordering Pennine areas though considerable growth had occurred in the old forest settlements in the upper part of the wide Ure valley above Bainbridge. (Map 79). ⁷⁷

(d) The evidence of early maps provides additional support for the view that the bigger settlements remained related to

the Lowlands and Major Valleys, and particularly the Wider Valleys. Maps for the 16th, 17th and 18th centuries show places here, rather than in other areas (Maps 81-84) and we may assume that these places were marked because they were bigger. (Appendix 84).

The largest of the agglomerations were probably still Richmond, Ripon and Knaresborough in the Eastern Region. These centres achieved the status of Parliamentary Boroughs according to 18th century evidence.

112(74)
Knaresborough had been a Parliamentary Borough since 1553, and the others were perhaps not much later than this. These towns owed their further growth in large measure to their markets and the fact that they are situated along a natural marketing zone, between the Central Pennine area to the west, increasingly dependent on pastoral farming, and the Vale of York to the east with arable cultivation.

Admittedly all these indications of the pattern of settlement distribution after the 14th century are often very indirect or a matter of samples. There is a dearth of more direct evidence of population distribution between the 14th century Poll Tax returns and the first census of 1801, or at least of material in published or readily accessible form. On the other hand the evidence we have cited is not

insignificant and considered as a whole is not without weight. It does not show us all the details of the pattern of settlement distribution as it existed after the 14th century but there were indications of the main features of this pattern. We can say from this that the general outlines of Domesday Survey and Medieval settlement distributions, based on fundamental considerations, would certainly appear to have persisted at least up to the eve of the Industrial Revolution, when new factors such as the spread of industry appeared.

D. Regionalism in the Distribution and Sizes of Settlements in 1801.

The first census of 1801, used in conjunction with contemporary maps, enables us to prepare the maps showing

- (a) The density of population (Map 85)
- (b) The size and distribution of villages (Map 86)

The density map is based entirely on official data (Appendix 85) but the other involves counting dwellings and estimating village sizes on Teesdale's map of 1835²¹¹ (Appendix 86) with the aid of the 1801 population figures from the census. The discrepancy of 34 years between the statistics of population and the evidence of actual distributions on the map is not likely to seriously affect those estimates of village populations since there were no township boundary changes and in any case we are only trying to obtain approximate populations. These methods of determining village sizes, given fully in Appendix 86, are the only practicable ones for a large area, and without the use of a whole team of investigators working from the individual census returns for each house. As a means of determining actual sizes of individual places the methods would be unsuitable, but it is the regional differences in relative sizes with which we are concerned and for this approximate estimates are sufficient.

The main point brought out by the maps of village sizes and population density

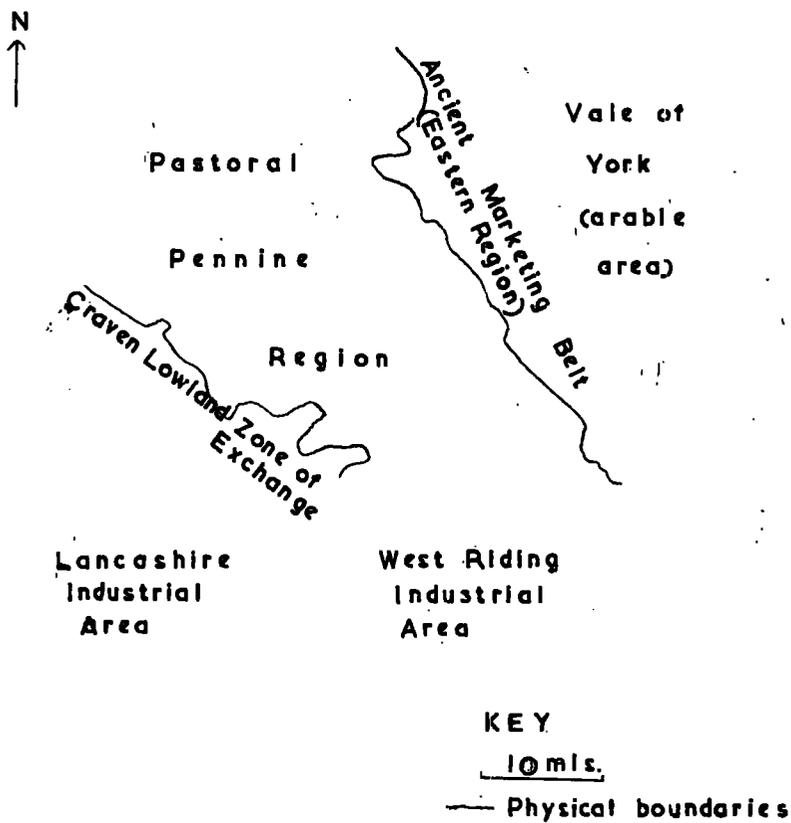
is as follows. The villages and denser populations still broadly corresponded with the regions with better physical conditions for farming, the Lowlands and Major Valleys, with only occasional hamlets and small villages in most other Pennine areas with more limited possibilities for land use.

The biggest villages and densest populations still corresponded mainly with the Lowlands and Wider Major Valleys^x, with the most intensive farming (arable and cattle farming, see above page 69 foll). Villages with over 200 inhabitants were mainly limited to these areas, spreading elsewhere only where the growth of lead-mining and cottage textile industries in the Pennines had provided a temporary spur to village growth (as in Middle Swaledale with lead-mining and parts of the Millstone Grit Dipslope with linen industries as well, with the advantage of soft water (Map 87, Appendix 87)).

The largest agglomerations, chiefly market towns, still distinguished the Eastern Region, but this ancient marketing belt (above page 102) was now being rivalled by a second 'zone of exchange' corresponding with the Craven Lowland (see map below).

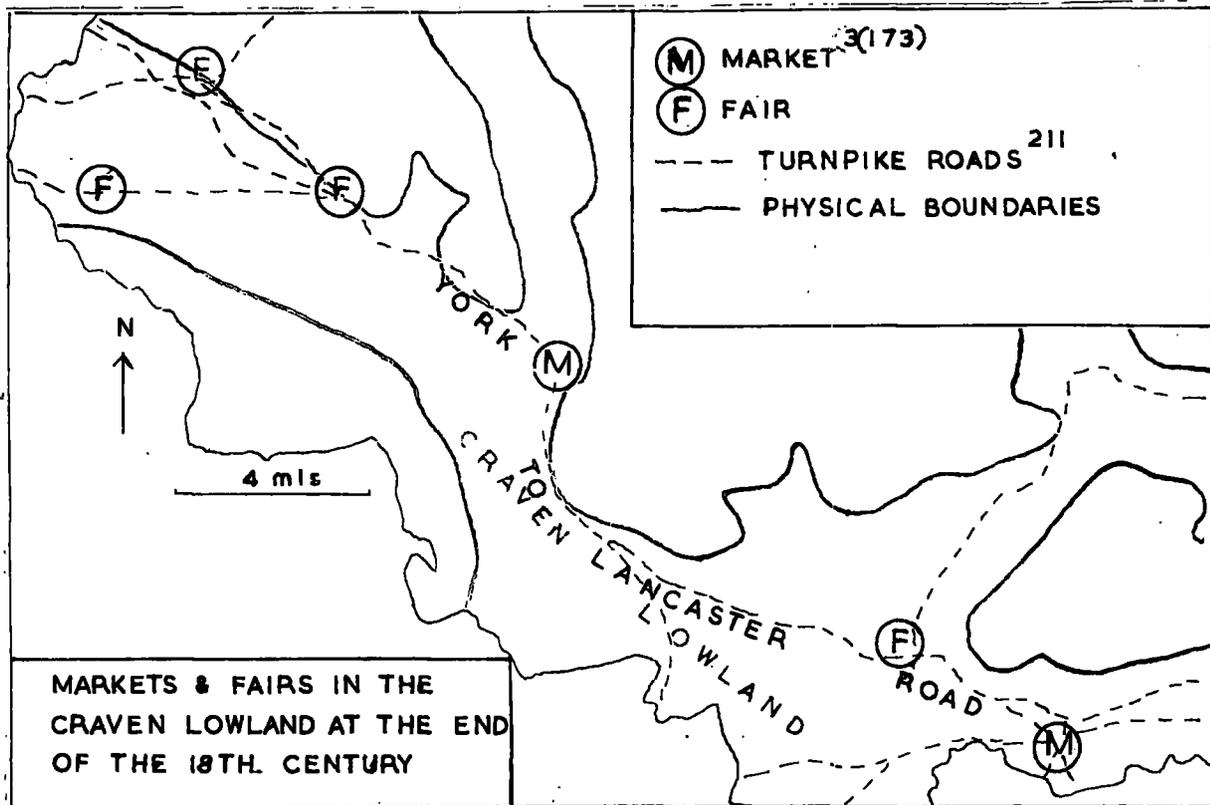
x This was true of Nidderdale as well as Wensleydale and Lower and Middle Wharfedale with the intensification of farming after the disappearance of forest restrictions.

ZONES OF EXCHANGE



The map above shows that with the growth of large industrial populations on the Lancashire and Yorkshire Coalfields to the south, the Craven Lowland, situated between these areas and the predominantly rural Pennines to the north, had great possibilities for marketing, and particularly as, being a Pennine gap, it was accessible to both the growing manufacturing areas on either side of the Pennine barrier. This was leading to the growth of a number of large 'market' or 'fair' villages⁺, such as Ingleton, Clapham, Settle, Gargrave, High Bentham (Appendix 3(173) 88), as well as Skipton. The location of these centres is shown on the map below and Map 87.

⁺ The spread of textile industries on a small factory basis to these villages from the Lancashire Coalfield to the south¹²⁶⁽¹⁰⁴⁾²⁹⁽¹⁰⁸⁾ was perhaps a subsidiary cause of their growth and that of others in the Craven Lowland.



The large 'market' and 'fair' villages were almost all situated on the main road along the Craven Lowland. This York-Lancaster road, long important as a major highway, and linked with the growing conurbations on the coalfields, had obvious advantages for the growth of marketing centres and favoured village growth generally. A markedly linear distribution of large villages had thus resulted (Maps 86,87). This growth of settlement along the route reflects the fundamental character of the Craven Lowland, that of a major routeway and only lowland gap through the Pennines in the area under review.

Some change in the pattern of settlement distribution had also taken place in Wensleydale

+ Advantages of situation here largely governed the spread of the textile industries (above p.107 footnote) which was mainly along this road and leading to village growth.

Unlike Domesday Survey and Medieval times, when the main break in the pattern of population came about at Bainbridge, this change in the size and density of settlements now occurs at Aysgarth (Map 87). In other words it reflects the division into Upper and Lower Wensleydale. This represents an adaptation to physical conditions after the disappearance of forest restrictions. When the forests were designated the spread of people and farming into Wensleydale had been incomplete. The remoter upper part of the dale above Bainbridge had not then been reached or at least not extensively occupied, and owing to the forest laws here further spread was restricted and the distinction between this area and the more populated and cultivated dale lower down perpetuated.

This is only a matter of historical accident, i.e. the date at which the restrictions were imposed. With the growth of population in the dale above Bainbridge, well advanced even by the early 17th century (Map 79), and further stimulated by the granting of a market charter to Hawes in 1705,⁴⁹⁽¹⁹⁾ the division of the dale at Bainbridge is no longer apparent on the settlement map (Map 86). On the other hand it is quite clear that population and the number of large villages (Map 87) decreases markedly above Aysgarth.

where the valley is higher and less favourable for cultivation or cattle farming than the Lower Dale (Appendix 89).

These changes in settlement distribution in Wensleydale and the Craven Lowland emphasise the fundamental character of the settlement pattern and show that geographical influences have become more powerful than in the Middle Ages.

E. Changes in the Distribution of Population After 1801

After the first few decades of the 19th century general rural depopulation began. Various factors contributed:-

- (a) The decline in lead-mining due to the import of cheaper supplies of lead from Spain after 1860. ^{78(206),52(23),3(118)}
- (b) The disappearance of cottage industries and handicrafts with the concentration of industry on the coalfields with the factory system and the use of steam power. ^{146(7,20 foll)}
- (c) The attraction of the growing industrial conurbations with high wages (Appendix 90). ¹⁴⁶⁽¹³⁾

Map 88 showing changes in population density over the 1801-1951 period indicates that rural depopulation was most widespread and severe in the poorer Pennine area. This was partly because the severest depopulation due to the disappearance of lead-mining occurred here, but in general it reflects fundamental causes, such as the abandoning of marginal land in the depression years, and the economic and social conditions of an area dependent mainly on hill sheep grazing. In particular the history of low personal income levels on poorer land has contributed to a steady loss of population. ¹¹⁶⁽⁴⁷⁾ Also the hard life on the upland sheep farms, with little margin of personal expenditure, and the ⁷⁸⁽⁸⁶⁾

physical and social isolation in this area of often small scattered settlements with few main roads (Map 89), do not appeal to many of the younger people today.

On the other hand in many parts of the Lowlands and Wider Major Valleys, with better communications (Map 89), population declined less and often remained steady or even increased. The fact that the farming was more intensive, and no doubt more profitable, tended perhaps to bind the population more to the soil. Other factors, however, had contributed to the growth of population to a very large extent. In particular various ones have led to the growth of towns and urban villages here. (See Maps 88, 89)

(a) The expansion of industries, such as spinning, explains the considerable growth of Skipton from 1830 onwards, after the completion of the Leeds-Liverpool Canal gave access to the Lancashire Coalfield. ⁸¹⁽¹³⁾ Similarly situation in proximity to the West Riding woollen-manufacturing region and the spread of spinning and weaving from here, was an important factor in the growth of population in Lower Wharfedale after 1801, for example in Barley and Menston, now part of the Ilkley Urban District. The establishment on a modern factory basis of traditional linen industries has been a factor

possibly in the growth of population in Lower
Nidderdale (^{60 II (330)}Appendix: 187). The establishment of
paper-making at Richmond from about the 1820's onwards ^{61 I (28)}
has contributed to the growth of this town.

Engineering has led, amongst other factors, to the
growth of Otley in Lower Wharfedale. ¹¹²⁽¹¹²⁾

- (b) The modern increase in motor transport has favoured
the recent development of Skipton, Ilkley, Settle etc.
with tourist attractions. This factor, and especially
that of the motor coach traffic, needing stopping
centres, has been particularly important in the case of
Skipton at a natural cross roads in the Aire Gap
between the Lancashire and West Riding industrial
regions and the major seaside resorts of Northern
England. ^{81(14 foll)}
- (c) Residential development has contributed to the growth
of Lower Wharfedale towns, particularly Ilkley,
Burley etc. within easy reach by modern transport of
the Leeds-Bradford industrial conurbation.
- (d) The fact of markets has been an important factor in the
growth of the urban villages, such as Leyburn, Pateley
Bridge, Masham etc. but particularly in the Craven

Lowland where more markets have been established, as at Bentham^{and} Long Preston and Hellifield on the York-Lancaster road. This further growth of population along the route in relation to markets has resulted from the increasing industrial populations on the coalfields to the south demanding more purchasing facilities in the Craven area, and the obvious advantages of market sites along the busy York-Lancaster road (above page 105 foll).⁺ As the towns on the Lowlands have grown they have tended to increase the population of the surrounding rural parishes, by such means as the following:-

- (a) The spread of residential building along the roads leading out of the towns.
- (b) The building of schools, isolation hospitals, garages etc.
- (c) The intensification of farming e.g. market gardening.
- (d) The spread of industries, chiefly of a rural nature, with the advantage of access to markets and labour.

Growth of population has also occurred along or near the main roads and railways linking the larger towns, as between Harrogate and Ripon and along the Craven Lowland.

⁺ i.e. Skipton-Lancaster road

In this area the building of the Skipton-Carlisle line,
running alongside the York-Lancaster road, has contributed
to the further growth of the urban (market) villages and
other centres along this route. Examples include Settle,
Gargrave, and the important railway junction of Hellifield.
Growth of population has also occurred along the Great
North Road which passes along the eastern side of the
Eastern Region. Proximity to the Great North Road,
together with easy access to open moorland country, has
apparently been a factor in the choice of the site of the
military camp at Catterick, which has contributed to the
relative stability of population thereabouts (Appendix 91).

+ footnote p. 114.

F. Present Day Settlement Regions

The results of the changes in the distribution of population, consequent on rural depopulation in some areas and increases in population elsewhere, are seen in the modern maps of Density of Population (Map 90) and Sizes of Nucleated Settlements (Map 91), prepared from the 2½ inch O.S. Map and the census data (Appendix 92).

With the decline in population in the Pennines and Narrower Major Valleys and the increase in population in parts of the Lowlands and Wider Major Valleys, the larger agglomerations and denser population show an even more close relation to these regions than in 1801. The main reason for the persistence of bigger villages here is a fundamental one i.e. the better possibilities for farming and its greater intensity resulting (above page 76f, Appendix 93). The changes in population density after 1801 have merely emphasised this relationship to the more fertile and productive areas.

In spite of the depopulation the Narrower Major Valleys are still distinguished by more of the village type of settlement than the poorer Pennine area characterised by mere hamlets and isolated farms. Various factors have contributed to this, for example the better accessibility

of the Major Valleys, with main roads along them (Map 89), than other poorer parts of the Pennines. The main reason, however, for the persistence of more people here in even the lesser Major Valleys, is simply that though less productive than the Wider Major Valleys, they are fundamentally better areas with more intensive farming than most other parts of the Pennines. (above page 83f.).

The primary division of the area in terms of settlement (Map 92) is thus into the Village Regions, corresponding with the Lowlands and Major Valleys, i.e. the Arable and More Intensive Pastoral Regions (coloured on Map 93), and subdivided into:-

- (a) The Large Village Areas⁺, with denser populations, corresponding with the Lowlands' and Wider Major Valleys, i.e. the Arable Regions and Major Areas of More Intensive Pastoralism.*
- (b) The Small Village Areas corresponding with the Narrower Major Valleys, i.e. the Minor Areas of More Intensive Pastoralism (as opposed to the Sheep Region supporting only hamlets and isolated farms).

+ with many villages with over 200 inhabitants.

* excluding the poorer Millstone Grit Dipslope Marginal Cattle Region.

These Village Regions, and especially the Large Village Area, are reflected also on Map 94 (Statistical Appendix 38, Note 2, page 488f) showing relative proportions of nucleated and dispersed settlement. In these areas the better physical resources support a more nucleated type of settlement, whereas the poorer Pennine Sheep Region with few cattle has more dispersed settlement.

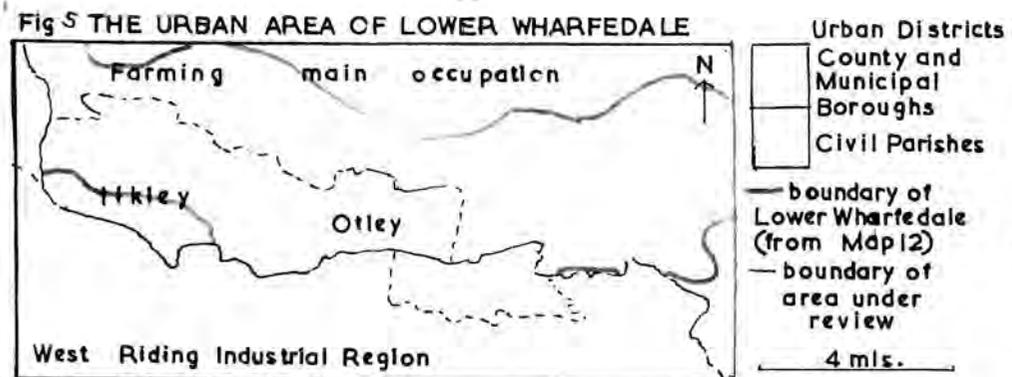
The numerous large agglomerations within the Village Regions serve as gathering centres for population. Most parts of these areas are within the range of urban influences, though in the Small Village Areas (Narrower Major Valleys) the lesser gathering centres such as village halls and public houses become the main social foci (Maps 95-97). Even so, all these regions (the Small Village Areas as well as the Large Village Area) are, in comparison with the other poorer parts of the Pennines, with only mere hamlets and isolated farms, well integrated socially, with a good system of bus services (Map 98). This results from the fact of larger nucleated settlements (villages rather than mere hamlets) fairly closely distributed along accessible Valleys. The small and scattered settlements of the poorer parts of the Pennines make for social isolation, even the village hall being absent or very rare,

and bus services, which could bring these areas within the orbit of larger centres, often do not pay.

Further differences between the Village Regions and the poor Pennine area of hamlets and isolated farms, and between the Large and Small Village Areas are seen in the morphology of settlement. The "square" and "street" types of villages (Appendix 94) and greens are limited to the Village Regions (Maps 99-101) with street villages showing a broad relation to the Large Village Area (Lowlands and Wider Major Valleys). The causes of these village types are still uncertain but the fact that they occur in these areas may reflect their accessibility to streams of Anglian and Danish settlers who probably established them in most cases (Appendix 95).

The portions of the Large Village Area corresponding approximately with the Eastern Region, and distinguished by towns in 1801, has suffered some change of status. With the

growth of towns in Lower Wharfedale (above page 112 f.
Appendix 96) the Ilkley-Otley ^{Map 91} portion of the Large Village
Area has become the main urban region, ^{except for} ~~apart from~~ the single
very large centre of Harrogate, ^{Map 91} ^{3(140), 54(124 foll)} which grew as a spa town,
especially with the building of the railways to it in the
later 19th century. ^{3(140), 29(61)} The Eastern Region can no longer be
regarded as the 'towns region' but must surrender this
distinction to Lower Wharfedale, or at least the southern
and western portion of it. This area has tended to become
more and more part of the West Riding urban region,
spreading out from the coalfield with the modern development
of communications. Such is now apparent on the official
map of Administrative Divisions (fig.s below).



On the other hand the portion of the Large Village Area corresponding with the Eastern Region, which we may now term the 'Eastern Settlement Region', is still broadly distinguished by towns (Map 91), even if much more widely spaced than in Lower Wharfedale. Also the Eastern Settlement Region (Map Sheet 102), which corresponds with the Arable Region, still has bigger farming villages (Appendix 97) than the poorer land on the Millstone Grit Dipslope to the west, ^{though the region} includes the immediate

vicinity of the Magnesian Limestone Scarp and in the lower and drier portion of the dip slope south of Harrogate and Knaresborough. There is also a denser population today than in Wensleydale (as well as in Swaledale) where, further from the largest centres, population did not increase so much in the 1801-1951 period. There are far more big agglomerations (with over 400 inhabitants) than in the more pastoral Nidderdale, also bigger agricultural villages than in the Craven Lowland with less cultivation, excluding the central line of large villages in this lowland region. The Eastern Settlement Region of large agricultural villages and towns does however include the eastern end of Lower Wharfedale, transitional, with the extreme eastern part of the Millstone Grit Dip slope, to the Eastern Region in the amount of land under the plough and forming the Harrogate-Harewood Transitional Arable Region (above page 80).

Street villages are most numerous in the Eastern Settlement Region, and this area is also distinctive in relation to many other aspects of settlement morphology. As this is an arable region the square plan of farm buildings is common, with the buildings arranged round a fold yard, whereas in other areas, dependent on pastoralism,

they are scattered over a wide area, with a small barn in each corner of each hay field ⁹⁽⁴¹⁰⁾ (Appendix 98).

Further distinctive morphological features of the Eastern Settlement Region reflect its general situation and greater fertility. Its position on the fringes of the Vale of York, part of the densely populated Lowland Zone of England, over which cultural traits spread readily, has resulted in many architectural features reaching the area which never spread to other regions to the west, relatively remote, less productive and with less wealth and money to spend on ~~new~~ innovations. The yoke tree framework, for example, spread only within the borders of the Eastern Settlement Region. ^{131(map)} Renaissance influences in architecture were felt in this region, whereas in the Pennines to the west the native Gothic styles ⁴⁰⁽¹¹⁴⁾ persisted. There are also contrasts in building materials between the two areas, the drift-covered Eastern Settlement Region being characterised by hedges and in places by brick building, whereas in the Pennines to the west stone walls everywhere replace hedges, except on the lower part of the Millstone Grit Dipslope thickly covered by boulder clay (Map Sheet 102).

Further differences in settlement morphology reflect

the various physical subdivisions of the Eastern Region. The outwash plain is characterised by brick building and a concentration of villages on the sand and gravel sites, avoiding the boulder clay, whereas the Magnesian Limestone escarpment is distinguished by its light cream coloured buildings using the local stone and village concentration on boulder clay sites, avoiding the lower alluvial areas.

The portion of the Large Village Area corresponding with the Craven Lowland (Map Sheet 103) has some of the features of the Eastern Settlement Region, for example the occasional hedges in the centre of the Craven Lowland and the number of very large villages whose existence reflects in part the intensity of the farming (above page 86). Nevertheless these big villages, strung out along the Skipton-Lancaster road (Map Sheet 103) mainly reflect the importance of the great routeway along which they are spaced

In general the Craven Lowland resembles the Pennines rather than the Eastern Settlement Region in settlement morphology, and the further growth of population along the Skipton-Lancaster road has emphasised the linear pattern of population distribution and big villages, whereas in the Eastern Settlement region the large agglomerations have remained evenly scattered over the area, characteristic

of rich agricultural land.

The further growth of population along the line of the large villages in the Craven Lowland has left the remoter villages of this area, like many somewhat isolated ones in Lower Wharfedale, as relatively small and unimportant places. These smaller village areas really form transitional regions (Map Sheet 103):

- (a) between the Craven Lowland and Grassington areas of large villages ((a)(i) on map 103a, Appendix 99) and a smaller area on the south ((a)(ii) on Map 103a).
- (b) On the north side of Lower Wharfedale, transitional to the small settlements on the Lower Millstone Grit Dipslope ((b) on Map 103a).

It is possible that more of the south side of the Craven Lowland could be regarded as a transition, but there is not such a big gap here before the next large village is reached. (Thornton in Craven, Map 103a).

To the north of the Craven Lowland 'Linear-Settlement Region', and to the west of the Eastern Settlement Region, the portions of the Large Village Area corresponding with the Wider Major Valleys are lacking in towns or even sub-¹³⁰towns according to A. E. Smailes classification (Map 95).

These settlement regions lack the fundamental basis in rich agriculture which distinguishes the Eastern Settlement Region. They have no great routeway like the Craven Lowland to stimulate growth or such special advantages of position as have favoured the growth of the Lower Wharfedale agglomerations. None of their agglomerations have^s as yet attained a population of 1600 and consequently the functions of towns have been conferred on large villages, such as Grassington, Hawes, Middleham etc. (Map 95).^{c.f. 9(368)}

Some of these Major Valleys have been represented by 132 Green as distinct 'social regions', for example Upper Wensleydale centring on Hawes, Lower Wensleydale centring on Leyburn, his method of determining such regions being to plot the 'reach' of bus services radiating from each centre. 132(map) 132(64 foll)

In general, however, these settlement regions corresponding with the Wider Major Valleys represent largely similar regions, separated by dissimilar areas.

The main exception to this is Wensleydale, where greens are particularly numerous (Map 101), and where a marked change in the type of settlement still corresponds with the Upper dale. (Map 103b). Large villages with over 200 inhabitants are numerous in the portion of the area below Aysgarth, with more

intensive farming (above page 87 , Appendix 100), and street villages occur, as in the other Wider Major Valleys, but above Aysgarth, in the Upper dale, where farming is less intensive (above page 87), large villages are fewer, as in 1801, and street villages are absent. Early plans (tithe awards, inclosure awards, and the early 17th century rental plans) show that the villages of the Upper dale always had the square plan, and were never of the 'street' type, so that this distinction in village morphology apparently goes back to early times. There are also further differences between the Upper and Lower portions of the dale in customs etc. and the general plan of farm holdings is also different in the two areas (Appendix 101).

The main distinction which can be made amongst the Small Village Areas corresponding with the Narrower Major Valleys is in the case of Upper Wharfedale and Littondale, with more nucleated settlement (Map 94). This apparently reflects the physical character of the dale as governing the choice of settlement sites. The valley sides were too steep for dwellings to be built on them and, rather than settle on the valley floor which is liable to floods, the inhabitants have chosen to restrict their settlements mainly to the alluvial fans¹⁸⁽²⁹⁾ which possess a number of

advantages, deep but well drained soils and a good water supply. These alluvial fans were sufficiently numerous and well developed in the region to provide almost as much land as was needed for building on.

In the poor Pennine area of hamlets and isolated farms, (Map 92), based on sheep farming with few cattle (Map 93), some division can be made in relation to the lower part of the Millstone Grit Dipslope (Map Sheet 104). Excluding the small part of this area east of the latitude of Harrogate, included in the Eastern Settlement Region, we can separate here an area of more numerous hamlets and a denser population than in the higher Pennines to the west. ^{c.f. Maps 90, 91.} The ^{hamlets} area corresponds with the spread of cattle farming up the dipslope, i.e. it is based on a more intensive economy than most of the poorer Pennine area dependent mainly on sheep. It includes the higher portion of the Eastern Region (west of the Arable Region), with a similar economy to the dipslope to the west.

This Lower Millstone Grit Dipslope Settlement Region corresponds largely with the belt of poor soils across which cultivation has ebbed and flowed over the last 150 years (the Millstone Grit Dipslope Marginal Cattle Region, above page 88, Map 104). The real increase in intensity of

farming here probably came too late, after the rural depopulation had already started, to lead to the growth of bigger nucleated settlements. This depopulation had in fact led to the small villages here in 1801 becoming mere hamlets by 1931.

These hamlets rarely have any definite plan, except for a fairly common tendency to a looseness of arrangement, perhaps indicating a transition to the dispersed type of settlement common here. This is particularly apparent, for example, in the case of Bishop Thornton (fig.t below).



This type of straggling settlement, like the dispersed type, possibly relates to the piecemeal spread of cultivation here on the marginal land and by the efforts of several rather than communal cultivators.

The Millstone Grit Dipslope Settlement Region is somewhat isolated, the improvement in road communications being more along the Major Valleys. There is a lack of natural route centres within the area, and it is served by market towns which have grown up more in the better bordering areas (Map 104).

These are the present day settlement regions in the area under review. In view of the very large number of settlement divisions, many of which are subdivisions of larger regions, they may be most coherently viewed in the form of the following system of classification.

V. CLASSIFICATION OF MODERN SETTLEMENT REGIONS AND CONCLUSION.

(the letters and figures used in this classification refer to the regions as shown on Map 105).

I. The Village Regions (corresponding with the Lowlands and Major Valleys)

These regions centre upon numerous towns or urban villages and are characterised by a relatively large proportion of nucleated settlement, "square" type villages, and villages with greens.

The regions include:-

1. The Large Village Area⁺ with occasional towns and a relatively dense population based on arable or intensive pastoral farming, and distinguished by "street" as well as "square" villages. The area includes:-

- (a) The Ilkley-Otley Urban Area owing its existence to special factors.
- (b) The Eastern Settlement Region (broadly the Eastern Region) with numerous large villages based on arable farming and distinguished by towns and many aspects of settlement morphology, some of which reflect the physical sub-divisions of the area.

+ Coloured blue on Map 105.

(c) The Linear-Settlement Region of the Craven Lowland reflecting its function as a great routeway through the Pennines.

(d) The 'Urban Village' Regions corresponding with the Wider Major Valleys. These pastoral regions do not have such large agglomerations as the above regions based on arable farming, or with special advantages of position or access. Upper Wensleydale forms a sub-division (d').

2. The Small Village Areas⁺ corresponding with the Narrower Major Valleys, with a less dense population (based on rather less intensive pastoralism) and more dispersed settlement, except in the case of Upper Wharfedale (e).

II. The Regions of Hamlets and Isolated Dwellings with a relatively small proportion of nucleated settlement, and suffering from 'social isolation'. These areas may be sub-divided into:-

[1.] The Lower Millstone Grit Dipslope characterised by numerous hamlets evolved under conditions of marginal farming on poor soils.

[2.] The Thinly Populated Pennine Sheep Farming Areas with few cattle and mainly dispersed settlement.

These are the regions in terms of which the whole

+ Coloured brown on Map 105.

social response to physical conditions is most coherently viewed, both now and over the past ages. The regionalism is essentially an economic one, in so far as the governing factors in settlement are the possibilities for land use, and accessibility, both reflecting the basic physical considerations, though in some cases there are direct responses to physical influences as well.

There are various approaches to the question of settlement regions, but in an area such as we have reviewed, where there are marked variations in accessibility, fertility and land use, the ^{regional} differences resulting in settlement from these are obviously the most outstanding features of the whole pattern. This is particularly obvious in such aspects as sizes of villages and population densities, but it also applies to others as well. Many social aspects of settlement, such as the extent to which population is linked by gathering centres, have the same basic regionalism. This regionalism is seen also in settlement morphology and it is probable that even such features as village plans are also a response to these same factors of accessibility and possibilities for land use, even if at present, the whole question of village plans and their causes presents a variety of problems not

yet properly elucidated.

On the other hand such approaches to the question of regionalism as have been made by Smalles, Green and others, ¹³⁰ ¹³² are not very useful in an area such as ours. The social approach, and the concept of the large agglomeration as the vital reality extending its influence over the surrounding area, may be interesting but is difficult to relate, for example, to the physical geography, and certainly in our area there is not much relation, nor is there any obvious regionalism in this connection. Likewise the administrative divisions or regions designated by the various authorities are largely, if not entirely, at variance with obvious physical divisions, cutting across them or ignoring them completely in most cases. A noteworthy exception is provided by some of the Employment Exchange regions, which extend into the Pennines along the lines of the Major Valleys.