

ART. I.—*Factors which have affected the spread of early settlement in the Lake Counties.* By ROBERT HOGG, B.Sc., F.M.A.

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THIS paper is an assessment of the extent to which such factors as topography, geology, and the activities of Man himself have influenced the settlement of the Lake Counties. The effects of natural features were most pronounced in the early settlement of the area, when large areas were undeveloped and the spread of settlement restricted. This is well illustrated by the study of the occupation of the Carlisle Plain. This is an extensive and fairly low-lying area stretching southwards from Dumfriesshire to the Caldbeck Fells, which is for most part thickly spread with heavy glacial clays. Its vegetation cover under completely natural conditions was forest and its present cleared and relatively dry state is due to the deforestation and drainage by Man.

In pre-Conquest times the Carlisle Plain, which was potentially the richest settlement area in the Lake Counties, was in its natural state of forest land and was almost completely unoccupied. As we trace the settlement of the Lake Counties further and further back in time therefore, we shall find that the pattern conforms more and more to the distribution of natural features. This premise is the basis of the following study.

### **1. The geographically isolated position of the Lake Counties.**

The Lake Counties lie deep in the mountainous Highland zone of Britain, and in early times they were

almost completely cut off from the neighbouring regions by areas of difficult terrain. Thus unless the external economic or human pressures were strong enough to break down the resulting isolation, the people of these parts were subject to cultural stagnation.

It is instructive to trace the effects of geographical isolation on the economic and cultural affairs of the Lake Counties. In the New Stone Age and Early Bronze Age which are the earliest historic periods of which there is evidence of extensive settlement, the Lake Counties, in their economic relation to the rest of Britain, held a very favourable position. The occurrence here of excellent fine-grained volcanic rocks extremely suitable for the manufacture of stone implements, and of deposits of copper ore, the principal constituent of the alloy bronze, were early inducements both to settlement within the region and trading contacts far beyond its borders.

The development in the New Stone Age of an efficient centre of polished stone axe manufacture, exploiting the highly siliceous volcanic lavas of the Great Langdale region of central Lakeland, brought the Lake Counties into trading contact with the greater part of Britain, and especially with the emerging agricultural regions of the south east.

The remarkably high level of technical skill which was traditional amongst the axe manufacturers was still evident in the Early Bronze Age, when the region benefited from the importance of the Irish Sea basin in the development of the early metal trade.

The introduction of the use of iron into southern Britain in the Fifth Century B.C. was responsible however for bringing about an economic decline in the Lake Counties. The production of iron was much simpler to organize than the alloy bronze, and iron ore deposits were more widely distributed, so the richer southern tribal states became completely independent

of the resources of the Lake Counties. Thus in the period of time before the invasion of Britain by the Romans the Lake Counties had become completely isolated from the progressive influences which were reaching southern Britain from the Continent, and the cultural level of its people rose no higher than a degenerate Bronze Age level.

The isolation of the Lake Counties was finally broken by the penetration and occupation of the region by the Romans in the First Century A.D. The efficient net-work of strategic roads constructed by the advancing army subsequently became the channels along which flowed a vital infusion of wealth into the economy of this impoverished region. Britain now became part of what was virtually the common market of Europe, and the Lake Counties, which during most of the period of occupation formed a major part of the heavily defended frontier zone, shared fully in the commercial benefits which Britain derived from its vastly increased continental trade.

The standards of practice introduced into the Lake Counties by the Romans were never again attained until recent times. The post-Roman history of the region is generally one of increasing isolation and economic decline. Thus by the 17th century the common form of domestic architecture in the isolated villages was the clay cottage with thatched roof — the clay daubin, and with a road system reduced to mere bridle tracks, the only form of commercial transport possible was the pack-horse. These are standards of social and economic practice no better than those of pre-Roman times.

The movement towards the modern era was heralded by the construction of the turnpike roads in the late 17th/18th century and accelerated by the railways in the 19th. There is a close analogy between the effects produced on the economy of the Lake Counties by,

on the one hand the 19th-century railways, and on the other by the Roman provincial road system built almost two thousand years before. At each of these points in time the economy of the Lake Counties was completely resuscitated, following long periods of decline, due in each case to the introduction of a factor which broke down the isolation of the region.

## **2. The boundaries of the Lake Counties and their effect on settlement.**

Most of the area of the Lake Counties is cut off from neighbouring parts by well defined natural features which in ancient times restricted free movement into the region.

The western boundary is the open sea which in the extreme northern and southern parts cuts deeply into the region forming the Solway Firth and Morecambe Bay. Although the sea provided easy access it also created special problems to unauthorised entry.

Where the encroachment of the sea ends the mountains almost immediately begin. Thus the eastern and southern limits of the region are defined by an almost continuous stretch of high ground, from the Bewcastle Fells in the north, southwards down the high Pennine limestone escarpment, across the Howgill anticline in the south east, to the south Westmorland fells.

Easy penetration through this almost continuous barrier is restricted to three main passages: the Tyne Gap in the north, Stainmore in the south east, and the Tebay Gorge in the south. Each of these natural gaps formed important historic folk routes and they were each used by the Romans from the earliest days of their occupation of the region: i.e. for the Stanegate, the Carlisle/Corbridge road through the Tyne Gap, for the trans-Pennine road from York to Carlisle across Stainmore, and for the main road from Chester to Carlisle via Low Borrow Bridge in the Tebay Gorge.

Only in the north western area of the Lake Counties, where a low platform of Triassic sandstone carries the Carlisle Plain deep into Dumfriesshire, is the boundary unprotected by any form of natural defence. The vulnerability of this area to any threat from the north west was recognised by the Romans who stationed the strongest auxiliary regiment of their frontier force at Petriana, Roman Stanwix, the point on the Roman Wall where the main route north into south-west Scotland crosses the Eden.

In the 15th and 16th centuries the ill-defined northern boundary of the region which bordered on Scotland passed across the Debatable Lands, a stretch of lawless country lying between the Sark on the west and the Esk and Liddell on the east. The area was the setting for long periods of Border strife which continued even after the boundary had been firmly fixed by arbitration in 1552. The boundary line then chosen was marked by the erection of an earthwork over three miles in length called the Scots Dyke, so that the problems arising from the absence here of a natural barrier were finally resolved by the construction of an artificial one.

Of all the natural features which mark the boundaries of the Lake Counties, the one which has had the most pronounced effect upon their political and economic development is the estuary of the Solway Firth.

The estuary has been formed by the differential eroding action of the strong tidal currents of the Solway, acting over great intervals of time, which have cut deep into the soft Stanwix Shales of northern Cumberland but which have been resisted by the much harder Palaeozoic rocks and intrusive granites which form the Scottish shore. By this action Britain has been reduced to little more than seventy miles across from the Solway to the mouth of the Tyne, but is more than twice this breadth immediately to the north.

The narrow neck of land so formed between the Solway and the Tyne is one of the strongest defensive positions in Britain, and it has been the occupation of this line in strength in the defence of southern Britain at various periods in the past which has had a most pronounced effect upon the political, economic and cultural life of the Lake Counties.

The strongest line of fortifications built across the Solway/Tyne position was Hadrian's Wall, the Imperial frontier of Rome. The construction of a manned frontier was a requirement of the decision to withdraw from Scotland. Had the conquest of Scotland been completed the Roman army might have been withdrawn from northern Britain, most certainly there would never have been the massive concentration of troops in the Lake Counties area which was an essential feature of the Imperial frontier policy, and the economy of this area would have suffered in consequence.

The Romans were not the only Imperial power to consolidate on the Solway/Tyne line. Almost a thousand years after the departure of the Romans, with the failure of Edward I's attempt to subjugate the Scots, the English were compelled to withdraw from their Scottish conquests and hold the Solway/Tyne position.

The English system of Border defence lacked the strength and cohesion of the Romans, being no more than a scatter of strong points, nor had it the strength of the Roman organization in depth. Thus it was incapable of withstanding the mass attack of the victorious Scottish army after the overwhelming defeat of the English at Bannockburn in A.D. 1314. The English Border region was devastated by the Scottish reprisal attacks after Bannockburn, and the peles which then began to be constructed were the efforts made for self-preservation by the people of these parts.

There is thus an interesting comparison provided by the study of the Roman and English attempts to consolidate along the Solway/Tyne line and of the effects on life in this Border area of the success or failure of their efforts. But if we trace the cause of these events to their source we must inevitably come to the part played by such natural features as the turbulent waters of the Solway and impassive bulk of Criffel.

### **3. The factors which have controlled the spread of settlement.**

The pattern of early settlement within the Lake Counties is closely related to the character and distribution of its rock formations. To explain this relation therefore the geology of the region must first be considered, by means of which it may then be shown that the Lake Counties can be divided into a number of natural regions, the extent of each of which is largely determined by the geology. The spread of early settlement in each of these regions and the factors which have affected it will then be considered.

#### **The geological structure of the Lake Counties.**

Some forty million years ago the rock formations of the Lake Counties were raised into a great dome by the last of the three violent earth movements which have convulsed the region.

The centre of this uplift was in the Scafell area, but the dome was not completely symmetrical. There appears to have been a small subsidiary dome to the north in the Skiddaw area and the main dome was attenuated to the south east where today the Howgill anticline forms an important ridge bridging the region between the Lake Mountains and the Pennines.

The Cumbrian dome, as it is known to geologists,

has been worn away by erosion over the long period of time since its formation. Today only the remnants of the uplift survive, forming the diverse topographical features of the Lake Counties. Thus what might be called the core of the dome — the central mountainous area of the hard Lower Palaeozoic formations, has been exposed by the removal of the superimposed more recent rocks, in particular the limestone of Carboniferous age and the sandstones and shales of the New Red Series. The outcrops of these later formations encircle the central mountainous area in roughly concentric zones, as illustrated in the simplified geological map (Fig. 1). The geological map shows not only the areas where the various rock formations crop out but provides too an indication of the structural relation of one formation to another.

It will help the non-geologist to a clearer understanding of the structure of the region if a comparison is made between the structure of the Lake Counties composed of a concentric arrangement of rock formations, and that of an onion with its similar arrangement of tissue layers. Thus, if an onion is cut longitudinally in half and one half placed on its cut surface on a table, the shape and structure of this half onion will be comparable to that of the Cumbrian dome at the time of its formation. If the top of this half onion should now be sliced off, exposing the core, then the structure of the remaining part consisting of the inner core and the outer encircling bands of tissue will be equivalent to that of the Lake Counties today.

By means of this comparison and a further study of the simplified geological map, there should be obtained a clearer understanding of the structure of the Lake Counties.

The solid geology determines the distribution of the principal topographical features, but covering the solid rocks is a great variety of superficial deposits, sands,

# SIMPLIFIED MAP OF THE SOLID GEOLOGY OF THE LAKE COUNTIES AREA

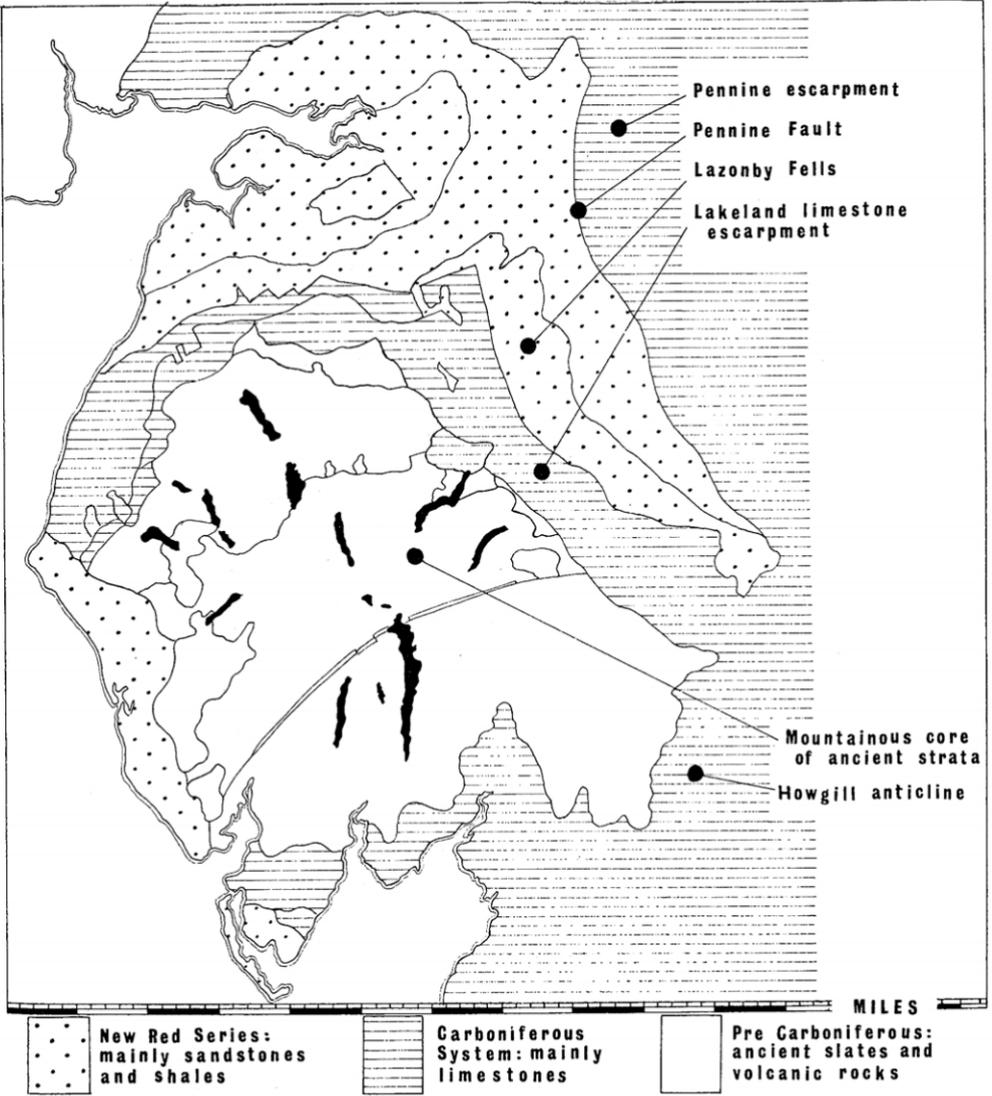


FIG. 1.

gravels, clays, loams and peat, in places of considerable extent and thickness which have had a marked influence on human settlement.

These superficial formations have been deposited by various agencies, by the action of the sea, the rivers, the wind, or in the case of the extensive peat mosses, by the accumulation of organic detritus. By far the thickest and most widely distributed deposits, however, are those which were formed during the Great Ice Age which include both the thick spreads of heavy boulder-clays resulting from the direct action of the moving ice sheets, and which reach a thickness of 180 feet in the Abbeytown area and of even greater thickness in Low Furness, or the hummocky masses of bedded sands and gravels left by the melt waters of the retreating glaciers. In the Brampton/Castle Carrock region the glacial sands and gravels form a complex hummocky area of light sandy soils stretching some four miles from the west to the east and ten miles from the north to the south, which is known to geologists as the Brampton Kame Belt.

For the study of these superficial deposits the student is referred to the 1-inch to the mile Drift Edition maps published by the Geological Survey. In the simplified geological map (Fig. 1) only the distribution of the basal solid formations are shown.

### **The natural regions of the Lake Counties and the spread of settlement within them.**

The map, Fig. 2, shows the natural regions into which the Lake Counties may be divided. Each of these regions will now be described.

#### **1. The coastal plain.**

The coastal plain of West Cumberland although of restricted size is of considerable interest to both the physiographer and the archaeologist. Along the shore

# The Natural Regions of the Lake Counties

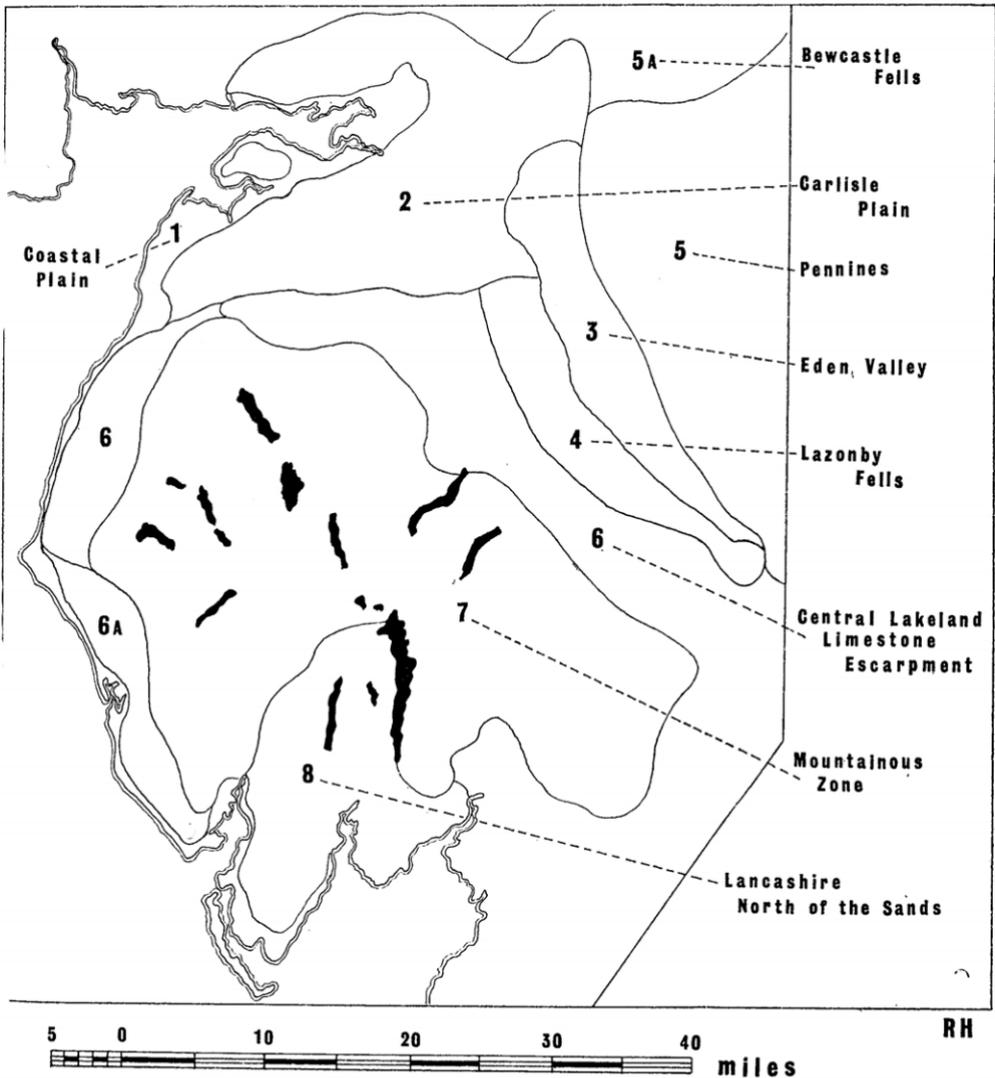


FIG. 2.

formations there is to be seen evidence of two clearly defined movements of the level of the sea relative to that of the land. The earlier of these two phases — the Buried Forest phase, is dated to immediate post-glacial times, i.e. about twelve thousand years ago. The sea level at this time was much lower than its present level, due to the impounding of enormous volumes of sea water in the greatly enlarged polar ice-caps. The shoreline was therefore much further seaward than its present limits, and proof of this is to be seen today in the stumps and roots of trees which lie buried *in situ* in tidal sands as, for example, about 100 yards off-shore at Beckfoot.

The second phase is known as the Raised Beach period. This event occurred about eight thousand years ago and was due to the final recession to their present limits of the polar ice-caps with the liberation of the impounded waters. The consequent hydrostatic rise in the sea level caused widespread submergence of the lower lying coastal areas and the deposition over these areas of thick spreads of marine gravels.

From about Neolithic times the coast of Cumberland has been slowly rising, a movement which may not yet have ceased, and with the recession of the sea which this isostatic movement has caused, the marine gravels are being left exposed as narrow terraces of the Raised Beach.

The marine terraces of the Raised Beach which are in places, as at Oyster Bank, Siddick, bordered inland by marine scarps cut by wave action in glacial clays, form a well-drained fringe of low-lying ground which provided a shore passage and early settlement zone.

In later times the terraces have become masked by extensive deposits of blown sand which are well developed between Silloth and Allonby, and also south of St Bees Head. The intervening stretch of coast is of high elevation and, of course, shows none of these littoral features.

It has been shown that at Beckfoot the most recently formed dune belt is that nearest to the shore line, where blown sand deposits lie on the cremation floor of a Roman cemetery. These dunes are therefore of post-Roman date, but inland there is a completely stabilised belt of older dunes. There, therefore, arises the possibility that these ancient dune belts have obliterated all trace of very early settlement in this coastal stretch.

Further to the south in the Drigg peninsula, south of St. Bees Head, where there has been a migration inland of the shore-line dune belt, Mesolithic and later occupation levels are being re-exposed, and heavily sand-blasted flint artifacts, including microliths, have been found there in recent years.

Throughout the Roman occupation period the Cumberland coast was exposed to hostile action from unoccupied Ireland, a threat, which if not of major concern to the frontier garrison, could nevertheless create local difficulties. The capture in one Irish raid into Lake Counties territory of Patricius the son of a local Roman official, who later was to become the patron saint of Ireland, has, because of its dramatic consequences, preserved for us a record of the scale and nature of the Irish threat.

From the first days of the Occupation therefore the Romans converted the Cumberland coastal area into a military zone which was to be held in strength. It was the route taken by the main units of the invasion army under Agricola in A.D. 79, in their rapid northward advance from Wales, and it enabled this force to by-pass the difficult central mountainous area of Lakeland and quickly reach Carlisle, the strategic centre of the region. Here no doubt the main army would be met by a second force which had crossed Stainmore from York by the route reconnoitred by Petillius Cerialis in A.D. 71.

The military importance of the coastal zone increased

considerably after the Roman withdrawal from Scotland in the early years of the second century A.D. when an elaborate system of coastal defence works was established from Bowness to St Bees Head to prevent the outflanking of the frontier works from the sea. There is an interesting relation of the siting of these coastal defence units to the geology.

In the estuarine area of the Cardurnock Peninsula they are situated on the marine terraces of gravel and warp; in the Silloth/Allonby sector the remains are deeply buried under post-Roman deposits of blown sand; but south of this area, as at Maryport, the remains are to be found on the top of the high marine scarps of boulder clay.

## 2. The Carlisle Plain.

This extensive area of low-lying ground, the location of the historic Inglewood Forest, extends from the central Lakeland outcrop of Carboniferous rocks northwards over the northern boundary of Cumberland and continues deep into Dumfriesshire. It is bounded on the west by the narrow marine terrace formations of the Cumberland coast, and on its eastern boundary by the Lazonby Fells, and to the north of this ridge by the extensive tract of glacial sands of the Brampton Kame Belt.

The area so defined is thickly spread with compact, impervious boulder clay, deposited during the Great Ice Age by glaciers moving into the area both southwards from the Scottish hills, and northwards from the Lake mountains and Pennines via the Eden Valley. This spread of boulder clay has a proved maximum thickness of 180 feet at Abbeytown, and an average thickness of 25 feet in the Carlisle area.

The Carlisle Plain is not flat, its surface clay spread is raised into innumerable low ridges called drumlins which were formed by the action of the moving ice-

sheet and which are therefore aligned parallel to the ice flow. Thus the general trend of these ridges forms a great arc which swings westwards from the Eden Valley round the Caldbeck Fells and then southwards parallel to the coast.

The natural vegetation of heavy clay lands would be mixed oak forest with dense wet undergrowth, but almost complete forest clearance and efficient drainage has now brought the whole of this rich agricultural land under intensive cultivation.

There is little or no evidence of Prehistoric settlement from this region, but in the vicinity of Carlisle, an area where the Eden Valley, one of the principal Prehistoric folk routes, traverses the Carlisle Plain, there have been found a number of Bronze Age cemetery sites as at Waterloo Hill, Aglionby, at Garlands, and at How Hill, Thursby. The precise location of these cemeteries is interesting. They are situated on glacial eskers which are lobated spreads of bedded sands deposited on the basal clays by melt waters of the retreating ice-sheet at the end of the Ice Age. The eskers usually rise above the lower boulder clay spread, as is well shown by the How Hill esker at Thursby. Their sandy soils are drier than those of the boulder clays, and in primeval times they would therefore be more sparsely wooded. It is such factors that probably attracted early Man to them.

In the second century A.D. when the Roman army made its planned withdrawal from Scotland and began its consolidation in strength across the Solway/Tyne isthmus the forested area of the Carlisle Plain, lying in the immediate rear of the newly constructed Imperial frontier, became a zone of considerable strategic importance. A network of roads had therefore to be cut through the heart of the forested area to meet the requirements of the new military dispositions, and new forts such as those at Old Carlisle and

Papcastle were constructed at strategic intervals along these roads.

Local forest clearance and native settlement occurred outside these forts, but both the fort garrisons and the native occupants of the *vici* — the extra-mural settlements, were engaged, directly or indirectly, in military activities, and there was therefore no large-scale attempt in Roman times to de-forest and realise the economic potential of the region.

It was not until post-medieval times that the major deforestation and drainage of the Carlisle Plain was carried out. It is therefore important to note that in the early settlement of the Lake Counties the Carlisle Plain, potentially the richest agricultural area in the whole region, made very little contribution to its economy.

### 3. The Eden Valley.

From its source in the Mallerstang Common the Eden flows for the greater part of its course almost due north, passing through gently undulating country, the subdued relief of which shows the smoothing effects of the northward passage of the powerful Eden Valley glacier. The greater part of this valley tract is composed of Triassic sandstones and shales, and in places the river cuts deeply into the soft sandstones, creating wooded gorge scenery of outstanding beauty. To the east the valley is flanked by the bold escarpment of the Pennines while to the west the ground rises more gradually to form the prominent ridge of the Lazonby Fells.

The Eden Valley was one of the major folk routes of Prehistoric times, a route which to the south crossed the Pennines via Stainmore to the Vale of York, and to the north reached through the Irthing Valley the Tyne Gap, the principal route of immigrants entering the Lake Counties from the east.

The Eden Valley, however, provided the earliest immigrants with more than a passage through the region — it offered, too, considerable inducements to settlement. The river provided fresh water, food and a means of transport, while the sandstone tracts of the valley area with their thin cover of lighter soils, offered dry habitation sites in a relatively sheltered area. There is thus evidence of widespread settlement within the area at least as early as Early Bronze Age times and this evidence, in the form of large stone circles, ritual burials, and the general scatter of contemporary artifacts, indicates the relatively high level of organisation attained by these early settlements.

With the occupation of the Lake Counties by the Romans, however, the pattern of settlement in the Eden Valley area was transformed. The people of Prehistoric times had been compelled to seek the valley tract for food and shelter. The Romans were seeking neither provision. The Lake Counties for them was essentially a military zone, and their plan of occupation of the region was based on the strategic dispositions of their army.

Of fundamental importance to the history of Roman settlement in this area was the road constructed by the Roman army engineers from Brough-under-Stainmore to Carlisle. This road was part of their major highway from the legionary base at York which crossed the Pennines via Stainmore. On entering the Lake Counties the line of the road followed the Eden as far as its confluence with the Eamont where it turned north westwards away from the Eden Valley and striking for the western side of the Lazonby Fells pioneered a new and important direct route to Carlisle along the lower slopes of this ridge. It was the siting of this major highway away from the Eden Valley which brought about, as will be explained below, the fundamental change in the settlement pattern of this area.

#### 4. The Lazonby Fells.

The Lazonby Fells form a ridge of high ground which is aligned parallel to, and lies on the western side of, the Eden Valley. The line of this ridge is marked by such prominent heights as Penrith Beacon, Lazonby Fell, and the partly wooded Barrock Fell behind High Hesket, which are familiar landmarks to travellers on the A6 between Penrith and Carlisle.

The whole of this ridge is composed of Lazonby Sandstones of the New Red Series which are conformably stratified with, but older than, the St Bees Sandstones of the Eden Valley. The simple structural relation between these two sandstone series can be represented by placing two similar sized books, one partly upon the other, and inclining them together at a fairly shallow angle, with the visible part of the lower book at the top of the inclined plane. The lower book would then represent the Lazonby Sandstones and the upper the later St Bees Sandstones of the Eden Valley.

A property of the Lazonby Sandstones which distinguishes them from the Eden Valley rocks is their excessive hardness, which is a secondary character induced by the partial recrystallization and fusing of the constituent sand grains. The Lazonby Sandstones are therefore relatively more resistant to erosion which explains why they now persist as a prominent ridge rising above the softer sandstones of the Eden Valley.

The soil cover of large areas of the Lazonby Fells is light and impoverished, and even with modern methods of agriculture much of the land is barren. There is, therefore, understandably little or no evidence of Prehistoric settlement along this ridge.

In Roman times, as explained above, the western slope of this ridge was selected as part of the route of a major military road. The route was reconnoitred by Cerialis in A.D. 71 and the road constructed no later

than A.D. 79-80 by Agricola. Forts were placed at fairly regular intervals along this road, at Brough, Kirkby Thore, Brougham, Old Penrith and Carlisle, the spacing of the forts being determined by such military requirements as patrolling, supply, etc. As the fort garrisons were the most highly paid personnel in the region, their presence not only ensured its security but became, too, the basic factor of the economy.

Thus a major highway constructed essentially as part of a military plan inevitably has a profound effect on the economic development of the region. A study in some detail of the history of the Brough/Carlisle road will clearly illustrate this point. After the construction of the highway there was a movement of the indigenous native people from the old settlement areas such as the Eden Valley to the new native townships or *vici* which began to grow up outside each of the forts. The settlement pattern of this region became in consequence completely transformed, that is, from a scatter of pastoralists along the fertile Eden Valley, to an essentially urban growth based almost completely on the regional planning of the Roman military command.

History has, however, often recorded the instability of economies which are based upon the presence of foreign troops, and the Roman occupation of the Lake Counties provides from antiquity an instructive example. The withdrawal of the Roman army from the Lake Counties at the end of the fourth century A.D. was probably as great a blow to the economy of the region as to its security, as the post-Roman history of the native townships demonstrates.

The native people of such Roman towns as Carlisle, Old Penrith, Brougham, Kirkby Thore and Brough-under-Stainmore enjoyed during the Roman occupation period a relatively high level of social practice and economic security, which is, amongst other

evidence, attested by the quality of the memorials found on their cemetery sites.

With the withdrawal of the Roman army from the Lake Counties the economy of these five native townships suffered considerable recession, and a study of their post-Roman history is extremely instructive.

At Carlisle, the strategical centre of the region, there is a long history of Dark Age survival. Thus the Roman-built public water supply system was still in working order certainly as late as the late seventh century, three hundred years after the departure of the Roman troops. At Kirkby Thore and Brough the post-Roman history of the native townships has still to be studied, but at each of these places there has been a measure of urban revival in post-Conquest times, due to the siting of Kirkby Thore in the fertile Eden Valley and to the strategical importance of Brough at the gateway to Stainmoor.

At Brougham and Old Penrith, however, post-Roman decline continued to the point of extinction and there has been no reoccupation of either site. The reason for the abandonment of these town sites is fundamental to the study of the post-Roman re-settlement of this region.

Aerial survey has shown that the urban spread at Old Penrith was extensive, and Roman Brougham being the meeting point of four major military roads is the obvious centre from which supplies could be distributed to military establishments in the whole eastern region of the Lake Counties. The siting of both these towns is therefore artificial in the sense that their success in Roman times can be explained only in terms of an expediency, that is the exigencies of military control. Their abandonment was therefore a direct consequence of the withdrawal of the garrison troops. When urban development began again in this area in the more settled conditions of the post-Conquest period,

settlement was centred at Penrith, a new town site lying fairly high and securely sited on the western slopes of the Lazonby Fells, at a point where this ridge is cut by the Eamont. From the new site there was direct access both eastwards into the Eden Valley and westwards into the heart of Lakeland, a position which was a more effective centre for the local administration of the whole of the surrounding area.

The Lake Counties provide many other examples of movement of settlement sites. Thus the native settlement outside the Roman fort of Olenacum at Old Carlisle is now completely extinct, and the later centre of urban life has developed a mile to the north at Wigton. Similarly Old Brampton has been re-sited at Brampton, and Papcastle at Cockermouth. These movements of settlement centres show the effects of a basic change in the pattern of settlement in post-Roman times resulting from the breakdown of Roman regional military planning and the growth of new towns sited solely as centres of local administration.

### **The eastern area of the Lake Counties.**

The solid rock formations of the whole of this area are interbedded limestone and sandstones of Lower Carboniferous age with the limestones predominating in the Pennine region and the sandstones becoming commoner towards the north where in the Bewcastle Fells limestones are almost completely absent. The reason for this change of rock type lies in the geological history of this area and was caused by the persistence of an elevated land mass — the Alston Block — which affected the deposition of sediments and the growth of limestone in this area in Lower Carboniferous times.

The markedly contrasting character of the topography of the Pennines and the Bewcastle Fells and of their settlement patterns is thus traceable to the

distribution of the two divers rock types, limestone and sandstone. The two regions will therefore be considered in turn.

### 5. The Pennines.

The Pennine escarpment has been formed as a result of the Pennine Fault, one of the major displacements of the rock formations in Britain. The alignment of this northern section of the fault is N/S. By the crustal movement it caused, the rocks on the west side of the fault line, that is in the Eden Valley area, suffered a downward displacement of several thousand feet, so that the rocks on the opposite side now stand above the Eden Valley area forming the mountainous fault escarpment of the Pennines.

The eastern boundary of the Lake Counties runs for most of its course along the crest of the Pennine escarpment climbing to a height of almost 3,000 feet on Cross Fell, the highest point along the whole length of the Pennines.

The Pennine area is typical limestone country with the high ground cut by broad dry valleys which are featureless except for the occasional scar formed by the outcrop of a limestone band or the interbedded intrusive mass of the Great Whin Sill.

The pattern of human settlement has probably changed little throughout the whole time of the occupation of the region. From the northern end of the Pennines a fell-foot road skirts the base of the great limestone escarpment and strings together a line of small villages from Castle Carrock in the north through Cumrew, Croglin, Renwick, Gamblesby and Melmerby to Skirwith and Kirkland beneath Cross Fell. The villages are small hill-farming communities exploiting the excellent sheep grazing on the lower slopes of the limestone fells and supplementing these resources with limited tillage on the Triassic rocks to the west.

These same inducements attracted relatively strong settlement in pre-Roman times, and evidence of Prehistoric settlement is fairly common and evenly scattered over the entire area.

To the Romans, however, the Pennines were more of a problem than an asset, as the mountainous ridge completely divided the frontier zone, isolating the eastern and western areas and making the cross-country communications between the two regions extremely difficult.

The problem was resolved by the construction of a mountain road from Kirkby Thore eastwards up the broad Kirkdale Valley and across the summit of the main ridge to the north of Cross Fell. The road then descended into the South-Tyne valley to the fort at Whitley Castle, and from there it continued northwards down the valley to reach the frontier defences at Carvoran.

Apart from the intrusive expediency of the road, evidence of Roman settlement along the Pennines is completely absent. This negative evidence has already been interpreted for the neighbouring Eden Valley area as an indication of a depopulation of the region due to a movement of the native people to the new towns which were being established along the military highways.

Although some form of rural activity must surely have continued to be practised in this fairly rich region, nevertheless the evidence would seem to imply that in Roman times in this military controlled frontier zone the organization of native affairs was essentially urban in character.

### **5A. The Bewcastle Fells.**

The distribution of Lower Carboniferous rocks extends north of the Pennines to form the Bewcastle Fells. In this area, however, as already explained the

limestones are almost wholly replaced by sandstones so that the soil cover is light and impoverished, producing coarse grassland of indifferent quality. Even today settlement in the form of widely scattered farmsteads is sparse, and in spite of a modern road system and good public services, the region still retains a rather bare and remote aspect, a fitting setting for its stirring tales of Border folk history.

The history of early settlement is of some interest. A scatter of Prehistoric sites has been recorded from the fringe areas, the occurrence of which in a region of little attraction is probably to be accounted for as an overspread from the more densely populated Eden Valley.

In the Roman period Bewcastle became a centre of strategic importance. A fort was established which together with the one at Netherby served as outpost warning stations for the vulnerable Gilsland/Carlisle sector of the Frontier works. The construction of the fort at Bewcastle and the centre of active occupation it established possibly accounts in part for the remarkable post-Roman continuity of occupation of the site, where the standing evidence of Saxon cross, Medieval castle, post-Medieval church and more recent farmsteads is of a range and quality unmatched at any other site in the Lake Counties.

Some account may be given here of the effects of the Pennine Fault on activities in this area. The modifications in the construction of Hadrian's Wall is the best known example. The faulting out of the Carboniferous strata west of the Pennine Fault meant that sandstone and lime were not readily available along the Cumberland sector of the Wall. Both these items were available in considerable quantities in Cumberland but at points much further to the south of the Wall line. The supply problem was, however, complicated by the undeveloped state of the country and time, too, was a consideration. The construction

of the Roman Wall in turf from Harrows Scar to Bowness was the Roman solution. In the Randylands (Milecastle 54) sector the Turf Wall was built of beaten clay, a local modification imposed by the sandy nature of the soils of the Brampton Kame Belt.

More work is still required to be done on the detailed study of these supply problems. As an example, it would be instructive to know if Cumberland stone was used for the Turf Wall turrets in the extreme western sectors of the Wall as the supply of stone for these primary structures has a bearing on the history of the organization of supply in this isolated area.

## **6. The Central Lakeland limestone escarpment.**

The rocks of the Carboniferous Limestone Series of central Lakeland form an extensive crescent-shaped outcrop which encircles the northern and eastern areas of the Lake Mountains in the form of an elevated ridge of subdued relief, from Ireby in the north, eastwards to Caldbeck and then southwards to Greystoke and Crosby Ravensworth.

The continuous sweep of this elevated ridge, one of the most clearly defined natural regions in the Lake Counties, rises fairly abruptly to a height of about one thousand feet above the Carlisle Plain, but is itself overlooked by the taller Lake mountains with their more ancient and rugged profiles lying to the south.

The principal rock type of the ridge is limestone, so that the soil cover is thin, so thin in fact that the bedrock is exposed in places as in Greystoke Park. The vegetation is therefore light but in the form of rich sweet grassland which provides excellent sheep pasture. Such conditions are therefore a complete contrast to those of the neighbouring zones where to the north there are the heavy clay lands of the Carlisle Plain and to the south and south west the sour, peaty soil cover of the ancient rock formations of the mountainous

zone. The line of demarcation between the limestone and the ancient rocks of the Lake mountains is usually clearly defined by a marked change in the pattern of vegetation.

In Prehistoric times, before the development of the Lake Counties by Man, attractive settlement areas were extremely restricted. Two of these have already been noted — the Eden Valley and the narrow coastal plain of marine gravels. A third and by far the most important zone of easy settlement is the limestone escarpment of Central Lakeland. All round the sweep of this limestone ridge there is evidence of pre-Roman settlements, from Aughertree Fell in the north west, to Crosby Ravensworth and Crosby Garret in the south east. The native sites in the vicinity of Carrock Fell are part of this pattern, although the contemporary hill-fort for greater security was constructed not on the limestone ridge but on the neighbouring gabbro/granophyre intrusive complex which forms Carrock Fell.

The limestone escarpment of central Lakeland however was important in Prehistoric times not only as a settlement zone but also as the principal folk-route into central Lakeland. It provided an easy elevated passage between the difficult forested area to the north and the Lake mountains to the south, and was especially important to folk movements from the west, that is to say for the Lake Counties contacts with Ireland.

The absence of evidence of Roman occupation on this limestone escarpment shows that its importance decreased as the Roman road system opened up other routes through the Lake Counties. In the south east, however, where the principal highway from Low Borrow Bridge to Brougham crosses the ridge near Crosby Ravensworth there is good evidence of continuity of occupation of the area long into Roman times.

Settlement today within this zone is centred in a

number of small villages which are evenly dispersed round the sweep of the escarpment from Ireby in the north, followed by — as far as the principal ones are concerned — Caldbeck, Hesket New Market, Greystoke, Dacre, Askham, Bampton, and Crosby Ravensworth. All these villages have an old-world charm and their history which includes such records as the Saxon monastery at Greystoke, the medieval castle at Dacre, the monastery at Shap, as well as those of the many fortified manor houses, reflects their antiquity and the continuous settlement of this attractive region from the earliest times until today.

### 6A. S.W. Cumberland.

In south west Cumberland south of St Bees Head the Carboniferous formations are completely faulted out and rocks of the New Red Series lie against the ancient Palaeozoic strata and the extensive outcrop of the intrusive Eskdale Granite. The platform of New Red rocks is relatively wide in the Egremont/Gosforth area but narrows considerably towards the south where it abuts on the Eskdale Granite, and is terminated by the Duddon Sands. The passage inland at the Duddon estuary is restricted by the Black Combe mountain, a faulted inlier of Skiddaw Slates which rises sharply a short distance inshore to a height of almost two thousand feet.

The restricted region so described with its neighbouring mountains and deep cut valleys has been an area of relatively heavy settlement from the earliest times. The history of this settlement is attested by a concentration of historical remains both of field monuments and by a scatter of smaller antiquities of a richness and quality unmatched in any other area of the Lake Counties. Coming readily to mind are such gems of antiquity as the New Stone Age settlement remains at Ehenside, the Roman bath-house at

Ravenglass, the superb crosses at Gosforth and Irton, the medieval castle at Egremont and the abbey at Calder.

The richness of this settlement pattern is probably best accounted for by the fact that as a coastal catchment area there was no other region which provided the same attractions of relatively broad dry settlement site with neighbouring mountain refuges. Other factors must, of course, have contributed to the growth of occupation such as the settlements of the stone axe manufacturers in the New Stone Age, the activities of the Roman army in this area, and the proximity of the Isle of Man, the principal source of Norse immigrants.

## **7. The central mountainous zone.**

The zone forms the heart of the Lake District and is composed of the oldest and hardest rocks, the altered or metamorphosed sediments of both the Skiddaw Slate Series and the Westmorland Silurian rocks, the lavas and ashes of the Borrowdale Volcanic Series and all the major intrusive masses — the granites and granophyres and the basic gabbros and diorites.

The highest mountains in England, Skiddaw and Blencathra (Saddleback) to the north and Helvellyn and Scafell to the south stand within the region, all of which reach heights of over 3,000 feet. Although the craggy profiles of the mountains dominate the scene the district is best known for its picturesque lake-filled valleys.

The occurrence of the lakes is due to the action of glaciers which during the geologically recent Great Ice Age over-deepened the broad valley floors forming rock basins which now impound the lake waters. The lakes are only one of the effects of the glaciation of the region, for the topography of the whole of the mountainous area was transformed during the Great

Ice Age and some account of these changes must now be considered.

Before the start of the Ice Age some half million years ago the mountainous landscape of the Lake Counties had been worn down by a long period of erosion to a state of subdued relief in which the rivers meandered through *débris* packed valleys between softly rounded hills. It was these features which were transformed by the prolonged grinding action of the glaciers. In particular the valleys were swept clear of their accumulated rock *débris*, the sides of the valleys were steepened to present their craggy and precipitous faces, the floors of the valleys widened and in places as explained over-deepened. Today it is these transformed valleys which provide Man with both easy access into the heart of the region and limited inducements for settlement.

Since the end of the Great Ice Age some twelve thousand years ago there have been further minor, but for the archaeologist, significant topographical changes in this region. Many of the lakes which formed when the glaciers disappeared are now extinct and the surviving ones are only a fraction of their original size due to the deposition of river-borne silts into them. Thus Crummock Water and Buttermere were formerly a single lake as were Derwentwater and Bassenthwaite, while higher up the Borrowdale Valley is the site of another lake which is completely silted up.

These post-glacial silt deposits which are now thickly spread over the valley floors provide areas of rich loam which by supplementing the grazing provided by the more impoverished upland areas have been a key factor in stabilising the economy of the early settlement of this difficult region. The presence of Castlerigg stone circle near Keswick shows that organized settlement was established deep within the region as early as the Early Bronze Age, a fact which can

be explained by the inducements offered by the fertile glaciated valleys.

In Roman times the central mountainous zone formed for most of the occupation period the deep rear of the frontier zone, and the study of its organizations by the Roman army is of interest.

Apart from the marching camps at Threlkeld which would indicate active reconnaissance of the interior in the earliest years, evidence of occupation of the Lake Counties in the first century A.D. lies wholly outside the mountainous zone. This evidence, recently reinforced by the discovery of the Flavian fort site at Kirkbride, shows that in the forward movement through the Lake Counties into Scotland the central mountainous area of Lakeland was virtually ignored.

With the withdrawal of the Roman army from Scotland and the construction of the Solway/Tyne defence line, the concentration of troops in the area was greatly increased and the pattern of military dispositions thereby transformed. The mountainous zone of Lakeland now became an active patrol area for major elements of the occupation army. The rearward communications of the frontier zone were now strengthened by the construction of a trans-mountainous supply road which in effect connected the west coast supply port of Ravenglass by passing over Hardknott and High Street, with the main highways from the legionary bases at York and Chester, the whole of this road complex meeting at Brougham. On the evidence of a Hadrianic building inscription from the control fort at Hardknott, this supply system is shown to have been constructed as part of the primary planning of the frontier zone.

The post-Roman history of settlement of the central mountainous zone is a record of the increasing occupation of the glaciated valleys, by new immigrants, principally Norse sheep-farming colonists whose direct

descendants in time became the "statesman" farmers whose flocks still graze the fell pastures.

### **8. Lancashire North of the Sands.**

This area of the Lake Counties is formed by the districts of Furness lying between the Duddon estuary and Windermere and Cartmel the adjoining area to the east bounded by Windermere and the Winster Valley.

The whole of this area lies in Lancashire, but although it is completely cut off from the rest of the county by Morecambe Bay it has stronger geographical and historical links with Lancashire than with the rest of the Lake Counties. Thus the mountainous areas of Coniston and Hawkshead in High Furness are shut off from the north by the Scafell massif so that their natural outlet is to the south, and the principal market centre for the people of these parts the county town of Lancaster.

To the west, too, the zone is cut off from West Cumberland by Black Combe, and the sense of cultural isolation of the region from the north is embodied in the old Furness saying "Nowt good ever came round Black Combe".

Thus little purpose is served in trying to correlate the historic settlement patterns of this zone with those of the rest of the Lake Counties. Most often there is a complete contrast between the two, and this fact is perfectly illustrated by the organization of the area in Roman times. Thus the fort of Lancaster in the fourth century was incorporated into the defence system of the Saxon shore forts, a system not only completely distinct from that of the northern frontier zone but administered by a different command.

### **Conclusions.**

From a study of the above regional accounts of the

settlement of the Lake Counties, it may be shown that the principal factor controlling settlement spread has varied from one historical phase to another.

Thus in Prehistoric times when the land was in its primeval state and the native people lacked the strength of organization to develop it, the spread of settlement inevitably conformed to the topographical structure being relatively densest in those areas of easy settlement.

The main areas of Prehistoric settlement were therefore the principal passage routes — the Eden Valley, the low-lying coastal strip, and the central limestone escarpment. Most of the remaining areas, the central mountainous zone and the forested Carlisle Plain in particular, provided little inducement to early settlement.

The general settlement pattern so created was modified in places by the effects of purely local factors. Thus the successful exploitation of the Langdale fine-grained volcanic tuffs by the New Stone Age axe manufacturers must have brought about a local increase of settlement in the vicinity of the factory site. This supposition is to some extent confirmed by the scatter of polished stone axes which shows a relatively heavy concentration in S.W. Cumberland and Low Furness.

The source of Prehistoric immigrants and their points of entry into the Lake Counties are also factors which have a direct bearing on the settlement of the region. Immigrants reached the Lake Counties from two widely separated regions, the cultural development of which derived from completely different sources. From the west they came from Ireland and the neighbouring lands of the Irish Sea basin, forming settlements first on the west coast and penetrating later into the interior chiefly along the limestone ridge of the Central Lakeland limestone escarpment.

From the east, immigrants arrived from the east

coastal regions of England, entering the Lake Counties from the south east over Stainmore, and from the north east through the Tyne Gap and the Irthing Valley. The primary settlement area of these people was the Eden Valley and the principal routes of their penetration into the Lake Counties were north westwards down the Eden Valley and out into the Carlisle Plain or westwards through the Eamont Valley.

It is thus fundamental to the study of the settlement of the Lake Counties in Prehistoric times to recognise not only the two sources from which the region derived its principal cultural influences but also the fact that the main areas of the spread of each type can be for most part clearly and separately defined.

Turning to consider the spread of settlement during the Roman occupation period, it can be shown that in every way — in the strength and direction of its movement, and in the nature of the principal factors controlling the spread — the history of Roman settlement differs completely from that of Prehistoric times.

The purpose of the Roman occupation was essentially the military control of the strategic frontier zone, and the spread of settlement conformed therefore to military planning. Such was the immense strength of Roman organization that where natural obstacles interfered with this plan they were effectively surmounted. The topography has thus little control on settlement spread during the Roman period.

One other restrictive factor to the spread of Roman settlement must be noted. The Roman occupation forces were wholly concerned with military affairs and there is little evidence to suggest that any major efforts were made throughout the occupation to exploit the economic potential of the region, that is to say there was no later modification of the basic military settlement plan.

Two distinct phases of Roman settlement are to be

recognised — the pre-Hadrianic, and the Hadrianic and later phase. In the much shorter earlier phase the strength of the military occupation was light and confined for most part to the outer lower lying areas — the coastal strip and the Eden Valley, with little penetration of the more difficult forested and mountainous interior. The holding units at this time were minor elements of the Roman army quartered in forts built of turf and wood. This phase of the occupation must have had little effect either on the economy or the resettlement of the indigenous native people.

The construction of the Hadrianic frontier brought about fundamental changes in the resettlement of the area. Major army units withdrawn from Scotland were now redeployed in considerable strength within the Lake Counties and stationed in permanent stone-built forts sited along a network of strategic roads which traversed the whole region. The profound effects of this change in policy both on the economy and the re-settlement of the native people has been fully discussed.

In course of time, therefore, the settlement pattern of the Lake Counties became firmly established on the basis of a military plan and the continued success of the region so organized depended more and more on the presence of the occupation forces. Therefore when the Roman army withdrew from the area the native people were confronted with an almost untenable situation, for not only did they lose the main source of their wealth, but they were left with a country economically undeveloped and organized in a manner which presented many difficulties for such development.

In the post-Roman period therefore, as neither the Romanised native people nor any of the later immigrants had the strength of organization of the Romans, there was no alternative for them but to

attempt to develop the economy of the region on the obsolete Roman settlement plan. The ultimate failure of their efforts in the face of both these internal difficulties and of hostile external pressures resulted in the complete collapse of organized settlement in the region.

The history of this bleak settlement phase is epitomised in the fate of Carlisle, the strategic and economic centre of the region, which throughout the 10th and 11th centuries lay derelict and abandoned.