

## 2.- BELGIUM'S GEOGRAPHICAL MOSAIC

### 2.1.- A HIGHLY DIVERSIFIED BIOPHYSICAL ENVIRONMENT

"On one side of Belgium's frontiers and on the other, one can identify the same landscapes, often bearing the same old local names on both sides." "Astride the great geographical borderline which, in Western Europe, separates the coastal plains from the interior massifs of old, hard rocks, Belgium... forms a section of the Anglo-Belgian-Dutch basin which, on either side of the narrow North Sea, is marked by the same marshy plains and the same stretches of sandy soils. Equally, it also contains a fragment of that fringe of loess which runs parallel with the northern edge of the old Hercynian massifs, and which extends east and west of the Rhine. It is also the westernmost bastion of those low mountain masses, with their foreland rich in coal deposits. And, finally, it also contains a fragment of the Paris Basin. In short, Belgium's territory, small as it is, reflects most of the manifold geographical facets of Western Europe" (F. Dussart).

A north-south traverse across the country, therefore, enables one to identify a series of belts orientated west-east or southwest-northeast. Within these, relief, bedrock, climate and soil form coherent and identifiable complexes, but in every case these have been extensively modified by human use. A regional subdivision on biophysical lines is best made in terms of altitudinal zones and contrasts in relief in relation to the hydrographic network.

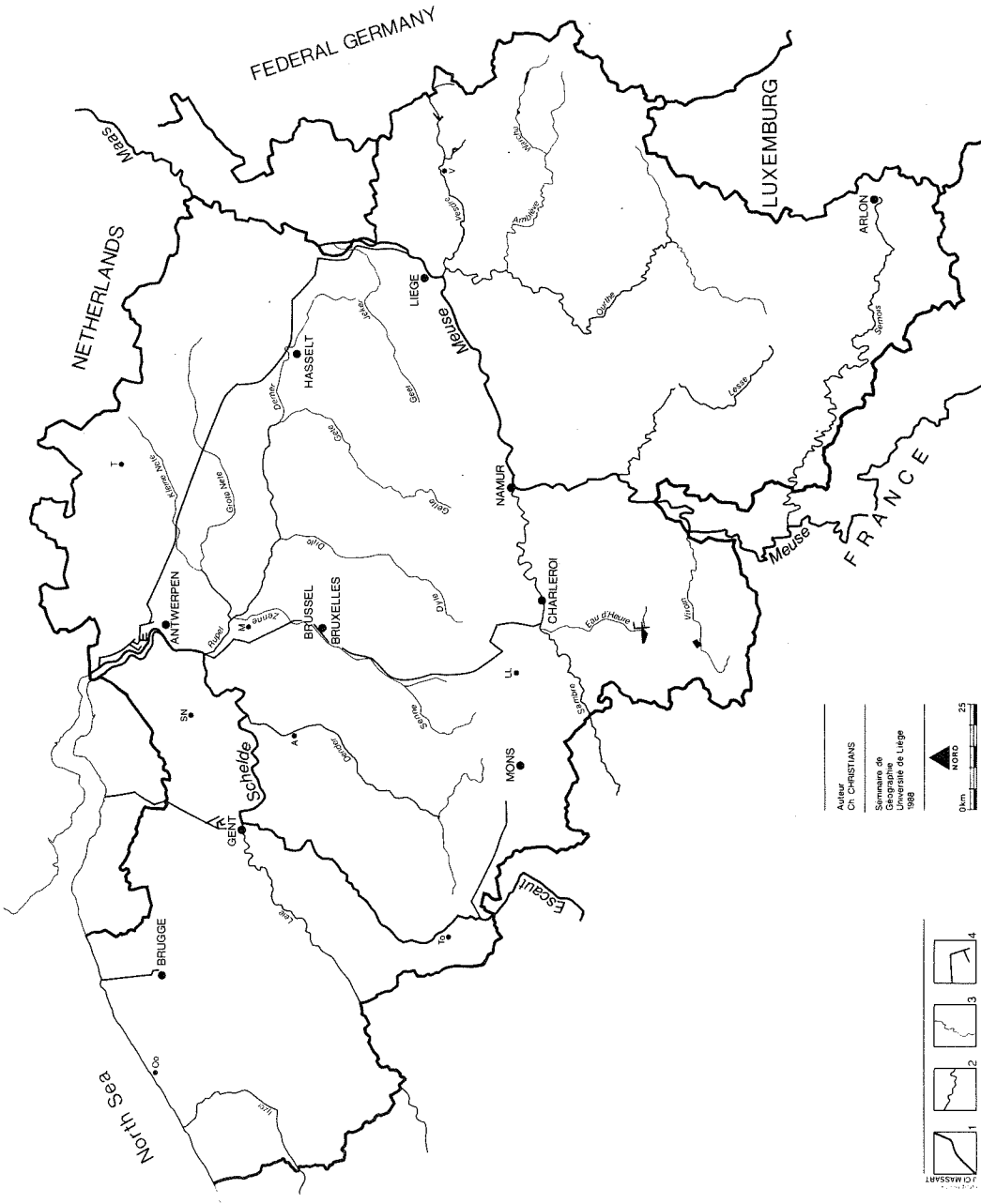
After the various phases of Hercynian mountain-building, "the first of which one can actually find tangible traces in the landscape" (C. Ek and A. Ozer); after peneplanation and some recurrent erosional activity in the Tertiary and Quaternary; after the Tertiary uplift, the high country of the Ardennes had taken on its present form in southeastern Belgium. Spreading from the north, the Diestian Sea in the Miocene extended as far south as the Sambre-Meuse line, at the foot of the Ardennes foreland : its retreat was to leave behind it the surface which today underlies those low plateaux and plains of Middle and Low Belgium that form part of the Belgian-Dutch Basin, and which runs down from the old rocks of the massif. The morphology of the plains of Low Belgium is a product of the glacial stages of the Quaternary, the area being subject at that time to periglacial conditions. At the seaward edge, where the land is youngest, it is marine transgressions of relatively recent times which have formed the coastlands - the polder belt of today, along the North Sea shore. By contrast Belgian Lorraine, lying on the southern flank of the Ardennes, represents part of the margin of the Paris Basin, with its Secondary formations, but within Belgium it constitutes a region of highly distinctive character.

Map 6.- BELGIUM : THE HYDROGRAPHIC SYSTEM

1. River
2. Main tributary
3. Other tributary
4. Canal

(Source : The topographic map coverage of Belgium).

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The drainage pattern is complex, nowhere more so than in the case of the River Meuse, which cuts through the Ardennes massifs and then flows along its front, then forms the Sambre and Meuse trench which is running parallel with it in the north. As far as the other main river, the Escaut/Scheldt, is concerned, its comb-like pattern is most easily explained for the streams flowing "parallel with each other (from the south-southwest to the north-northeast), the Lys, the Audenarde Escaut, the Dendre, the Senne, the Dyle, the Gette and the Herck : it is presumably a question of consequent streams on the Diestian shore during the tertiary. The east-west axes of the Escaut, Rupel and Dyle emerged, following renewed erosion which developed in connection with the glacio-eustatic lowering of sea level. Until the end of the second glaciation, it was by way of an over-flow channel situated north of Ghent that water from the Escaut/Scheldt basin drained to the sea, ... a channel... much deepened in the course of the last two glaciations" (Summarised by A. Laurant). It has been called the "Flemish Valley" in studies by R. Tavernier and colleagues in Ghent.

In sum, periglacial deposition and morphology are of fundamental importance in Belgium. It must be stressed that it was nivo-eolian sands which served to smooth the surface of Low Belgium, with deeper deposits in the valleys - to a depth, for example, of 20 m. in the "Flemish Valley" - and a thinner cover on the interfluves. In Middle Belgium, too, surface forms have undoubtedly been modified by the deposition of thick beds of loess from the same nivo-eolian sources. Traces of pingos in the Hautes Fagnes area of the High Ardennes are examples of periglacial landforms there, where the landscape also contains some traces of a boreal vegetation (Summarised by A. Pissart).

Nor can we neglect some of the more detailed morphological features, such as terraces and erosion surfaces, but they play a less significant part in regional subdivision (See, for example, the work of P. Macar, J. Alexandre and geographers at Liège).

Leaving now these general characteristics, we turn to a consideration of the various biophysical features of our regions.

The *lowlands of the north* have a general elevation of 0-5 m in the polderlands of the coast, and 5-50 m in the interior plains of Flanders and the Campine.

The polders are separated from the North Sea by a barrier of *sand dunes*, which runs parallel with the present coastline, never more than 4 km. wide and, in places, only a few hundred metres. The dunes have, today, been largely built over in the growth of seaside resorts. They were "originally lagoon-formed, a lagoon which gradually silted up to form the "Flemish Marsh", in its turn to be transformed into polders" by reclamation (M. Lefèvre). Where the dunes have not been built over, they are fixed by a type of vegetation made up of marram grass and *carex* or sedge; on the inland side of the dunes there develops a vegetation of shrubs and bushes, while there are numerous plantations of maritime pines, for example around Knokke.

This *coastal polder-plain* extends broadly from Furnes to Bruges, and is continued eastwards by the river polders of the Scheldt estuary. The soils emerging from the former sea bed are for the most parts sea clays which, once dried out - a process begun in the 11th century - are very fertile. The three marine transgressions of the Dunkerquian, occurring between the 2nd century B.C. and the 12th century A.D., sculptured the plains and, in the intervening periods of lower sea levels, human occupation of these lands had already taken place. Micro-relief of as little as a metre or two has had its influence on agricultural land use (arable on the interfluves with favourable aspect; pasture in the slight depressions formed along the network of drainage ditches). Farming is favoured by the mild, maritime climate (more than 320 days frost-free p.a.; January mean 3°C; July mean 16°C).

The *inland plain of Flanders* stretches, south of the polders, to beyond the line of the Escaut/Scheldt from the northwestern border of Belgium to the northeastern. It has a surface of slight relief, of alluvial areas and flat interfluves. The large areas under 20 m a.s.l. corresponds largely to the infill of the "Flemish Valley", and the low hills which arise out of it rest on the eroded remains of the last Tertiary surface which emerged after the transgression of the Diestian Sea; in particular, the surface of the area known as the Pays de Waas. The bed of periglacial deposits which covers the plain plays a critical role in agricultural land use. Where the bed is thin (< 2 m.), the influence of the underlying tertiary formations (unproductive sands and sandy clays) is felt; hence a former landscape of heath and waste replaced today by plantations of pines, such as those between Bruges, Eeklo and Torhout. Where the cover is thick, the microrelief and the degree of sand and silt determine the soils conditions ranging from marginal to productive.

The *Campine Plain*, with its flat, sandy surface, stretches across the northeast of the country, beyond the depression occupied by the east-west flowing Demer, Dyle and Rupel. The geological substratum consists in the Northern part of the so-called clay of the Kempen (Under-Pleistocene sediment of continental origin) exploited by brick-yards and as raw material for cement-works. The Southern part consists of the sands of Mol (Pliocene) exploited for glass-works and of Diestian sands (Miocene) characterized by iron-stained sandstone layers.

pleistocene niveo-eolian sand cover is locally banked up into inland dunes. Soils are distinctly podsolized so that they have an endured horizon of illuvial humus and/of iron, generally about 30-40 cm below surface. This gives to the Campine soils the characteristics of being both sandy and waterlogged, with water accumulating on the impermeable horizon of the soil profile. Hence the lakes, marshes and peat bogs which contrast so sharply with the sand dunes. The poverty of the soils (whose improvement and drainage have been a relatively recent occurrence) is further aggravated by an increasingly continental climate, whose features become more and more pronounced as one moves eastwards across the region (frost-free for less than 300 days p.a., and mean temperatures falling). Alongside the remnants of earlier heathland and numerous coniferous plantations there has developed in the past a balanced agricultural system of which the heathland represented one of the resources and contributed to a landscape-ecological stability.

Between the plains and the low plateaux there stretches a narrow zone of sandy loess, which forms a line of plateau-margin hills, alternating with well-defined valleys. This dissection of the edge of the central low plateaux creates a close series of relief forms above and below 50 m, with their steeper slopes generally wooded. The result is a patchwork of small landscape regions, varying according to their subsoil and to the thickness of the loess cover - the hills of Flanders, the slopes around Louvain, the hills of the Hageland (between the Dyle, Demer and Gete Rivers), the many valleys and flat surfaces of the Humid Hesbaye. This zone widens in Flanders, between the hills and the sandy plain.

The *low plateau of the Campine* is, to be sure, a different type of relief with a different origin, but it is located in a similar position in relation to the other low plateaux. What we have here is, between 50 and 100 m. in altitude, a vast old outwash cone of the Pleistocene Lower Meuse. The 10 m of mixed sand and gravel which cover it are responsible for the aridity of the plateau and for its plantation with wide areas of pine and larch forest. The slight increase in altitude here and the nature of the surface are, in their turn, responsible for accentuating the continentality of the climate (280-290 days frost-free p.a.).

The *central low plateaux* rise slowly in elevation from 50 m. to 200 m. at the edge of the Sambre-Meuse trench. They are more or less dissected by a whole network of rivers which in places have cut down to the Paleozoic bedrock. These are Belgium's most fertile regions, thanks to their cover of loess. The loess gives an air of kinship, if not of uniformity, to the regions of Hainaut, Brabant and Hesbaye. It is the degree of permeability of the subsoil which governs the density of the drainage network and the moisture content of the soils, which is never very great. Climatic conditions here are moderate, particularly in the west, nearer the sea; seasonal differences between summer and winter temperatures are a little more marked than on the coast, but less so than in the Campine. There is a frost-free season of 295-305 days, a January mean of 2-3°C, and 16-17°C in July.

The *low plateau of Hainaut* consists of low hills (50-100 m.) interrupted by the valleys of the Escaut and the Dendre and linking, in the east, with the plateau of Brabant along the line of the R. Senne, beyond which elevations rise to more than 100 m. The Tertiary subsoil is principally clay; this makes the loess belt relatively humid. The typical landscape of the region is to be found around the town of Ath. Further south, on either side of the west-flowing Haine, the variety of the lower strata - sandy, chalky, limestone, and even quartzo-phyllic - and the patchy cover of loess set local limits to fertility - as in the "Campine" of Hesbaye - where they do not eliminate it altogether, as in the Tournai region, the Hauts Pays (between the Rivers Haine and Sambre), and the Thudinie, beyond the Sambre.

The *plateau of Brabant*, between the Senne and the eastern side of the Dyle Valley, has a more pronounced and more broken relief. The Tertiary subsoil here is sandy, and this affects the loessial soils, which are less rich except where they are well preserved on the interfluvies, as at Nivelles or at Waterloo. Sands outcrop widely on the

scoured slopes of the entrenched valleys, and woods cover some of these sandy areas (magnificent beeches in the Forest of Soignes, south-east of Brussels; elsewhere coniferous plantings). It is the rather greater altitude of the plateau, combined with the same base-level of the rivers draining the region, that account for the greater dissection of the surface in Brabant than in Hainaut.

The *Hesbaye*, to the east, is characterised by a subsoil which is, generally, highly permeable, particularly when it consists of chalk or Tertiary sand. The landscape of the region is found in its most classic form in the Dry *Hesbaye*, north of Liège. As its name indicates, it is the product of an absence of rivers (but this is not so serious as to endanger either the quality of the soils or the water supply to the land), and it has a typically undissected surface of gentle undulations in the height range between 100 and 200 m. It is agricultural land *par excellence*, where the few patches of woods are used merely as hunting preserves. Towards Namur, and on the edge of the Meuse Valley, there reappear areas of humid loess land, covering a Paleozoic base; even threadbare, stony loess. This is the least fertile part of the *Hesbaye*.

A note is called for on the history of erosion associated with the bringing into cultivation of the loess lands. This latter process was begun in the Neolithic, was greatly extended in the Middle Ages - in the great period of the clearances - and seems to have created the maximum erosional impact in the 18th century, accompanying the intensification of farm practices at that period. Today, erosion has increased once again, following the process of land reform which has combined small parcels into larger fields, and eliminated so many of the field boundaries that acted as barriers to erosion. These latter had multiplied with the application of the laws of inheritance and subdivision in the 19th and early 20th centuries. A further disruptive feature has been the abandonment of the practice of using organic manure to fertilise the loess. In the *Hesbaye*, contemporary measurements of erosion on the slopes and of sedimentation in the hollows have produced estimates of soil loss of the order of 3-9 tons per hectare p.a., or 0.2-0.6 mm. p.a. (A. Bollinne, P. Macar).

The *plateau of the Condroz* and its margins, directly south of the Sambre-Meuse trench, are a clear indication of the total contrast presented by High Belgium, with its base of ancient, folded rocks. With increasing altitude and distance from maritime influences the climate becomes harsher, and the absence of any significant loess cover means that soils are derived from the decomposition of bedrock, and are generally stony. Neither climate nor soils contribute much to fertility in this foreland to the Ardennes.

The *Condroz Plateau* itself is, however, a fairly productive area, with crests rising from 200 to almost 350 m. It takes the form of alternating corrugations of sandstone ridges and limestone depressions, in conformity with a geological structure of anticlines in the Upper Devonian and synclines in the Carboniferous, the whole aligned parallel to the Sambre and Meuse. The sandstones yield mediocre soils, often identified by long, low ridges covered by deciduous woods,

while the limestones have weathered to soils with a proportion of clay, which are more fertile and possess a fair degree of agricultural potential. The landscape features accordingly vary with the outcrop of one or the other. A thin veneer of loess here and there on the limestones produces soils which resemble those of the Hesbaye. The major valleys, including that of the Meuse, cut through the plateau and dissect it further by deepening the longitudinal lines of weakness. The climate, harsher here, yields a frost-free season of 275-285 days, and a January mean temperature of 1-2°C.

The Sambre-Meuse Valley is separated from the Condroz by a narrow line of plateau, formed on Ardennes-type sandstones and shales of Silurian and Devonian age. The area is marked out by possession of a fairly continuous loess cover. Given the type of underlying bedrock, the soils are often moist and the ridges heavily forested.

South of the Condroz Plateau, an inverted relief of Appalachian type has produced the depression known as the *Famenne*. In spite of the fact that it lies below 200 m., it is the worst agricultural region in the country. It is formed by the outcrop of a wide band of particularly friable primary shales, yielding very wet, mediocre soils which are poorly adapted for agriculture. About one half of the surface is covered by a thin coniferous forest. Here and there buttes of limestone known as "tiennes" are scattered across the area. A series of limestone steps, primary too, separate the shaly depression from the first levels of the Ardennes proper at around 250 m. On the breadth of the steps, soils are good ; between the steps, bare rock forms abrupt breaks of slope.

The *plateau of Herve* is a continuation of the Condroz beyond the R. Vesdre, to the northeast. It is a region of deep valleys and summits at 200-300 m. The more or less horizontal Secondary clays outcrop on the ridges, and overlie Coal Measure shales and sandstones which have been widely dissected by a dense drainage network. The mixed soils produced by decomposition of these materials are mostly moist. Good land, with a moderate climate (albeit with subtle local variations), the Pays de Herve has been completely cleared for farming and woods are rare. Along the Meuse, from Liège to Visé, on a lower level than the Plateau, there are river terraces situated at 100-150 m., whose elevation, climate and loess cover combine to make them agriculturally valuable.

The *plateau of the Ardennes* is a name that conjures up high ground, poor soils, harsh climate and forests on a Devonian and Cambrian subsoil.

It is an area of natural handicaps whose mean altitude of 400 m rises to 694 m at Botrange in the northeast. Its broad surface is smooth, except where, on its margins, river erosion has cut back into it. The ancient massif, folded and worn down by peneplanation, is best preserved along its central axis, an axis that runs in an arc from the hautes Fagnes (694 m ) in the northeast, over the heights of Saint-Vith (600 m ), the plateau of Bastogne and Neufchâteau (550 m ) as far as Gedinne in the southwest (440 m ). On these surfaces, where local relief is only slight, the headwaters of the rivers flow at first



in broad, marshy depressions, and then cut vigorously down into deeply incised valleys, such as those of the Amblève, the Ourthe and the Lesse. The Ardennes block is thus dissected on its north and west sides into a series of separate massifs, most of which themselves rise above the 500 m mark, like the plateaux of Tailles (651 m), St-Hubert (590 m) and La Croix-Scaille (504 m). These massifs, together with the Hautes Fagnes (= High Bogs), are areas of peat bog and undrained soils that repel agriculture.

The climate of the Ardennes, while generally inhibiting is, nevertheless, varied in detail by altitude and aspect. In general, there are more than 100-120 days with frost p.a. In January, mean temperatures fall to 1 or 0°C. or below, and the July means are seldom above 15-16°C. The areas of harshest conditions have only a short growing season with, for example, frosts in at least a third of the month of April, and sometimes also in May, with a return of frosts as early as September. In winter, temperatures often fall to -10°C, with a minimum in 1985 of -33°C. Precipitation may exceed 1400 mm. p.a., compared with less than 800-900 mm. at stations in all the rest of Belgium. The lime-deficient soils are cold, usually stony, thin and poor, except in the St-Hubert-Gedinne sector. But it is the climate which imposes the severest limitation upon the Ardennes.

It is possible to distinguish between the *northeastern Ardennes*, a country of valleys and plateau surfaces, skeletal soils and forests, and the *central Ardennes*, which can be further subdivided into an area of agriculture and forestry on the central plateaux, and a margin including the deep peripheral valleys, where forestry is the primary land use, without agriculture being entirely absent from the flatter surfaces. But it must then be added that the Ardennes of today have changed unrecognisably from the region of a century and a half ago. the vast, rough sheep pastures of that period have disappeared, to be replaced by coniferous plantations where, in the 18th century, there were only thin forests of deciduous species.

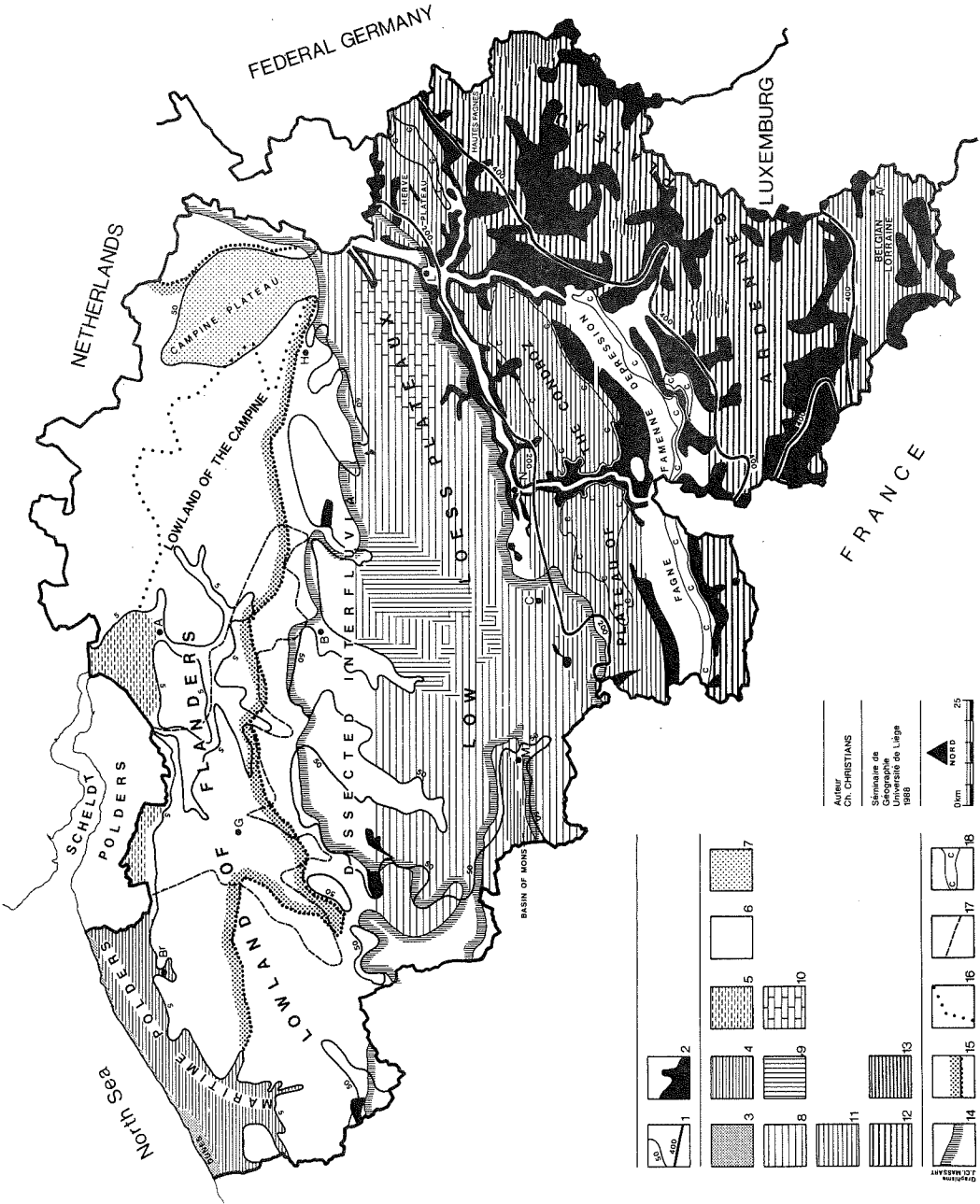
*Belgian Lorraine*, on the southern border of the Ardennes, has a variegated landscape like that of the northern foreland, and is a small segment of the Paris Basin. Generally speaking, it is a fertile region, lying below 400 m. The monoclinical dip of the Secondary formations creates a structure of successive cuestas, wooded on the outcrop, dipping towards the south, alternating with depressions formed by subsequent streams, and orientated east-west. Here, the plateau surface has been almost entirely broken up. The scarps correspond to resistant sandstones and limestones, and the dips to clays and light marls. This region, the most southerly in Belgium, is sometimes described, a little fancifully, as "Little Provence", but this at least gives a fair impression of the climate: the region is frost-free for 265-275 days p.a. and there are more than 1650-1700 hours of sunshine, that is 100-200 more than in the centre of Belgium.

## Map 7.- BELGIUM : BASIC PHYSICAL FACTORS

1. Principal contours
2. Areas with slopes in excess of 15 %
  
3. Sand dunes
4. Maritime polders
5. Polders of the Scheldt Estuary
6. Plain, with hollows and valleys
7. Low plateau, with pebble-gravel cover
  
8. Low plateau with slight relief
9. Low plateaux, with dissection of sandy subsoil
10. Low plateau with chalky subsoil
  
11. Plateaux with relatively little surface relief
  
12. High plateaux, with relatively little surface relief and harsh climate.
13. Ditto, over 600 m.
  
14. Limit of more or less continuous loess cover
15. Limit of sandy soils
16. Southern limit of predominantly podzolized sandy soils
17. Boundary of the 'Flemish Valley'
18. Principal areas of pebbly-loess soils on limestone

(Ch. CHRISTIANS, Dept. of Geography, University of Liège, 1988)

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1968

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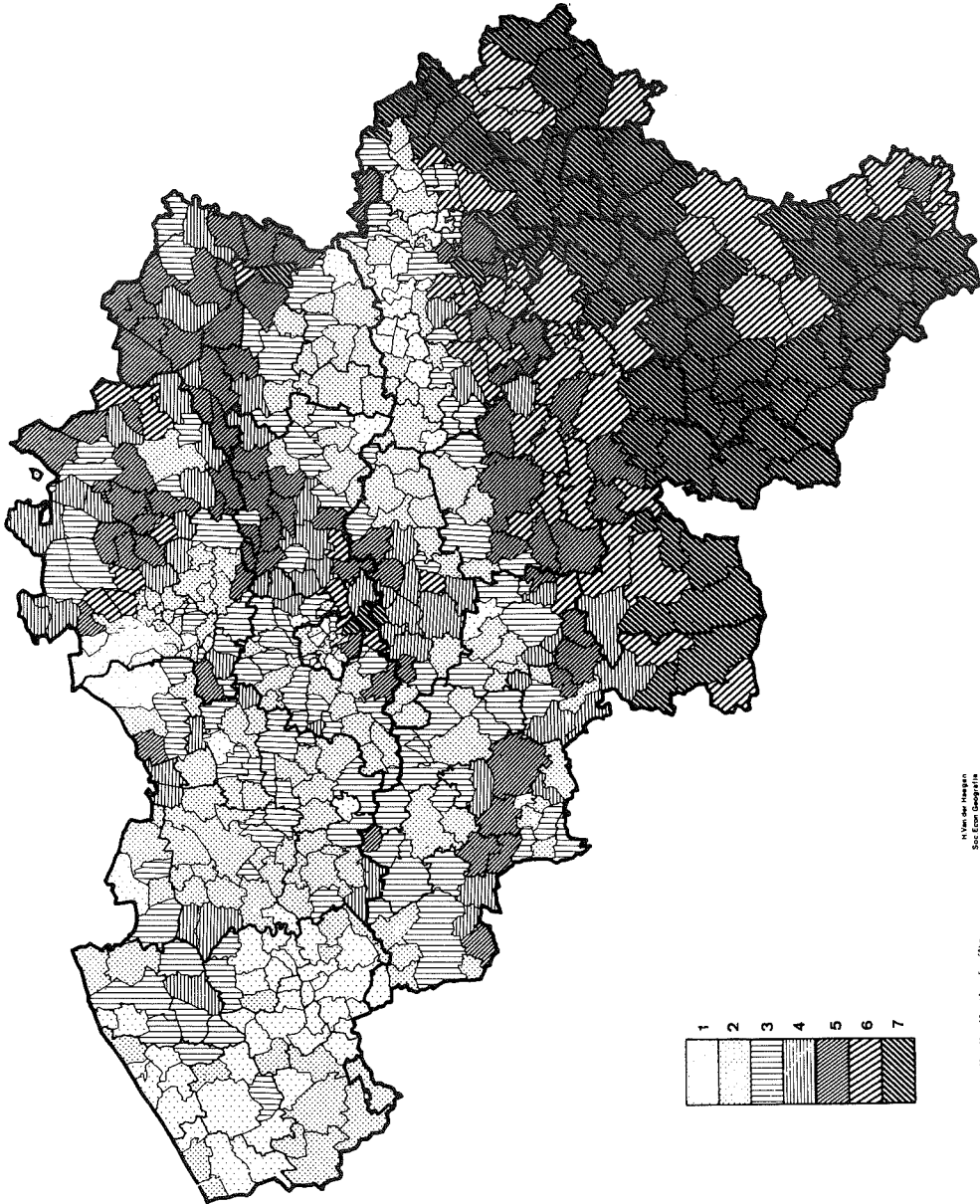
## Map 8.- FORESTS AND WOODLAND, 1980

(% total area)

1. 0 - 0,9
2. 1,0 - 4,9
3. 5,0 - 9,9
4. 10,0 - 14,9
5. 15,0 - 24,9
6. 25,0 - 39,9
7. 40,0 and +

(Source : H. VAN DER HAEGEN, Belgium in Maps II,  
in Bulletin de la Société belge d'Etudes  
géographiques, 1982-2, p. 343).

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## 2.2.- A SET OF GEOGRAPHICAL REGIONS IN WHICH MAN HAS ADJUSTED HIMSELF TO HIS ENVIRONMENT

### 2.2.1.- *The Linguistic Regions*

Without over-simplifying the account, one can link together the sandy and sandy-loess plains of the north and the polderlands of the coast as belonging to the Flemish domain; that is, as areas of high population density and intensive urbanisation. Equally, one can link the central low plateaux and High Belgium as components of the Walloon domain; in this case, the major line of urbanisation is that of the river valleys - Haine, Sambre, Meuse. This was the axis of 19th century industrialisation, a growth drawn here by the corresponding line of coalfields - fields that today are economically non-viable. High Belgium lacks any urban centres of importance. The hills of the plateau edge roughly define the language line, even while Flanders extends a little on the low plateaux east of Brussels.

### 2.2.2.- *The impetus to urbanisation and industrialisation : their layout and influence*

*In a country as widely urbanised as Belgium, we should begin by noting the way in which present patterns are related to those of the 19th and early 20th centuries, a period which had a profound impact on the country's space relations, in order that we may be made aware of the processes involved in urbanisation and industrialisation.*

The most significant urban regions of today more or less coalesce in the central part of the Flemish Region (Antwerp, Ghent, Malines, Louvain), where they form a kind of triangle, linked with Brussels as its southern apex. It is here that suburbanisation and 'rurbanisation' in Belgium are developing most strongly, morphologically and functionally, into the surrounding rural areas, and the processes also involve the dense network of intervening towns. The same processes can be seen developing, over the past 40 years, in the Campine with its comparatively recent industrialisation, although in this case the region still lacks a major urban centre. On the Walloon side, the influence of the old industrial valley-line is more limited. Thus it is the loess lands of the central low plateaux and, in particular, High Belgium which today contain the rural areas with the highest proportion of active farm workers - communes with 10-20 % of their workforce employed in agriculture.

The five major agglomerations with over 350,000 inhabitants (Brussels; Antwerp and Ghent on the Flemish side; Liège and Charleroi on the Walloon), and the regional centres with populations of more than 50,000 are located between 50 and 100 km apart, so that all the rural areas of the country are within the sphere of influence of some upper-order centre. High Belgium, especially the Ardennes, forms an exception to this statement, however, as do a few border areas elsewhere. Within the network of central places thus formed, the small towns (populations of 2,000 +) are distributed at intervals of 15-20 km: their functions link them closely to the surrounding countryside. The fact that High Belgium possesses only towns of this smaller type throws

light on the relatively weak development of this area, which is attributable in turn to its historic lack of easy access and its meagre economic potential. The lack of urban growth in the Campine, also, is evidence of the historical poverty of the region.

The plains, and the valleys running up into the plateaux, were the preferred locations for towns, either at their founding, or at their rebirth in the Middle Ages, since trade and administration - which were their basic functions - required accessibility. They grew, also, with the production of agricultural surpluses within the region, surpluses which could both feed their populations and provide commodities for trade.

*In Flanders*, the importance of Bruges as a port, in the days before the Zwin silted up, the centrality of Ghent in the former County of Flanders and the flourishing of Antwerp before the closure of the Scheldt Estuary by the Netherlands in the 16th century, were foretastes of the prosperity of these cities today, renewed after a centuries-long break. Obviously, their present prosperity is based on a number of causes, but the fact that they have achieved it means that the port function has assumed a renewed importance, as has transport generally: by canal and railway since the 19th century, not to speak of more recent traffic by motorway. This is the case with Antwerp; with Bruges and its modern outport, Zeebrugge; with Ghent and the canal to Terneuzen on the mouth of the Scheldt River: the growth of industries in these ports - particularly chemicals, petrochemicals and steel - is a testimony to confidence in their future.

In the Campine, the development of manufacturing industry, aligned along the motorways, equally expresses this confidence - in spite of the fact that, between the two world wars, coal mining and a handful of chemical industries signally failed to generate prosperity. After an expression of the textile industry in the 19th century, the towns of Flanders, in most cases became busy centres of employment in the various branches of the industry, as did also the towns of Flemish Brabant. A powerful industrial axis was born last century, linking Antwerp and Brussels, and continuing into Wallonia toward Charleroi: the A.B.C. axis.

If different geographical regions have been differently affected by these economic changes, they are also affected by differing population dynamics and residential conditions, which are related to one another. Demographic vitality is generally striking in regions of Flemish occupation, but it is found at its highest in the various parts of the Campine, where it is a legacy of rural life and attitudes influenced by their northern neighbours, the Dutch people. After World War II, there was a trend towards the localisation of economic activity here, to which the region was able to contribute a labour force that was young, plentiful and available (birth rates in the Campine were 25-35 per thousand in 1947, and 15-27 per thousand in the 1970s, compared with averages of 18 and 16 respectively for Flemish Belgium as a whole). This same demographic pressure has also been responsible for widespread renewal of rural housing in the Campine, though without changing the traditional pattern of large villages and isolated houses. 50 % of today's housing is postwar in date; the other 50 % consists of older buildings which have undergone renewal. By contrast, in western Flanders the Westhoek area shows a bare minimum of housing activity, and it is undeniable that here emigration has cancelled out natural increase: it is of all regions the least altered and the most eccentric.

Between these two extremes, Flanders can be divided into two parts, separated by the line of the Ghent Escaut, a line corresponding to a very old and very important regional boundary marked by differences in the rural landscape. On its east side, in the urban heartland which focusses on Brussels, moderate demographic growth is accompanied by the dynamic restructuring of settlement; on its west side, the same modest demographic growth, here associated with increased distance from major urban centres, produces a region where transformation of the countryside is much less marked. For their part, the most fertile agricultural regions have, so to speak, repulsed the waves of urban and industrial settlement, whether it be in the polderlands or in the Flemish sections of the Hesbaye : in these areas the regional patterns have remained clear-cut, and one could give other examples.

*In Walloon Belgium*, the geographical reality which stands out most clearly is the urban-industrial trench of the Haine, Sambre and Meuse. In the far west, this cuts across the loess region of Hainaut in its southward bulge; elsewhere, it separates the central low plateaux from High Belgium and spreads out laterally in the loess lands. It is continued eastwards by the line of the R. Vesdre, as far as Verviers and Eupen. The decline of its industries, based on steel production and, formerly, on coal, has meant that, today, it is primarily a residential area with employment in services rather than manufacturing. The former textile industry of Verviers has gone : only Eupen retains its share. Outside the trench, in Hainaut, in the Valleys of Brabant and partly elsewhere various industries have been put into greater and greater difficulties. Regional differences are not brought to light by recent industrialisation, which is in any case too slight to show them up, but these same differences appear more clearly in relation to the industrialisation process of the 19th century and its effects. All these regions experienced a marked rural exodus, and the further they were from the trench and its industries, the more marked it was. The Ardennes and their margins were thus the regions most affected, while at the same time they also lost their craftsmen and their small iron works, which were formerly located along streams where water power was available, and were henceforth concentrated in the steel mills of the valley line. The Walloon link of the A.B.C. axis subsides.

At the present time, regional patterns in Walloon Belgium are being reshaped under the polarising influence of the cities which, here in the south, with its few urban centres, is much clearer than in Flanders, where the multiplicity of towns creates overlaps and subdivisions in their hinterlands.

So we find that a large part of Walloon Brabant is undergoing a very strong pressure exerted by population spilling out from Brussels. French-speaking, this population has been encountering problems in the Flemish-speaking periphery of the capital since the 1963 legislation. What this has meant for Walloon Brabant is a 5 % annual increase in population between 1970 and 1981, in total contrast to the empty areas that adjoin it. These latter, being regions where deaths exceed births, have lost anything from 2 to 37 % of their population over the same period. Regions a little further from Brussels, Hainaut and the Hesbaye in particular, have experienced some immigration and a slight increase



in population from this source in recent years. It has not, however, reversed the balance between births and deaths, nor has it led to urbanisation changing significantly the rural landscape. The new arrivals merely increase the rural non-farm population. Added to this is the fact that we are dealing here with fertile loess regions, where high-quality agriculture restricts urban spread.

South of Wavre, and beyond the Sambre-Meuse line, there is an axis of tertiary activities developing. It is marked by higher birthrates (15-19 per thousand in the 1970s), and the in-migration of young households. It follows the Brussel-Namur-Luxembourg communications axis, cuts across the empty lands of the Hesbaye around Gembloux, passes through the Condroz, and fades out in the Ardennes. Its emergence in the past 15 years or so brings out clearly, once again, the importance of transport in regional structure, even in a small country where distances are short. The convergence of recent migrants upon this axis groups them along lines of good communication with access to the cities, especially to Brussels and to Namur, administrative centre of Walloon Belgium. This new regional axis can thus be associated with the urban hinterlands of both Namur, as regional centre, and Brussels, as capital city. On either side of the axis the negative demographic balance of deaths over births still predominates, but in places recent in-migration makes up for this, as in Hainaut or the Hesbaye. This spread of in-migrants into country areas, while certainly only on a limited scale, is a fundamental movement indicating a new attraction towards rural living which has developed since the 1970s. Small towns and villages at motorway exits do well out of their situation, as for example Wareemme, between Brussels and Liège.

The rural areas of Walloon Belgium, although they have undergone profound changes in other respects, have shown only a slow increase in housing availability or quality: changes in the latter have mainly been made through internal modernisation of buildings which, to a large extent, were built before World War I and, in the rural areas, were originally farms. In Walloon Belgium, 41 % of the buildings, rural and urban, were built before 1919, as against 17 % in Flemish Belgium.

### *2.2.3.- The Layout and the influence of traditional regional characteristics*

*There is a logic of change that applies to those features of regional character which are a legacy of agriculture and forestry - including the distribution of rural settlement and agricultural holdings - comparable to that brought about by urbanisation and industrialisation. These rural features are recorded in the fine detail of the biophysical environment. Demographic conditions, and the outlook and actions of the non-farm rural population which, sooner or later, appears on the scene also play important roles in bringing about change.*

On the subject of *agriculture*, which covers approximately half the country, let us begin by commenting briefly on the major secular trends which have produced the features of today's agriculture. While

we must not overlook the regional differences, it can be said that the first such change has been the increase in artificial pastureland which has characterised Belgium since the corn crisis of the 1880s that was produced by the import of cheap grain from the New World into Europe. Since that enforced adaptation of its agriculture, the gap in supply which Belgium has filled is in livestock raising (in 1986, there were 3 million cattle, 5 1/2 million pigs, and 31 million poultry). On the other hand, for agriculture to become fully commercial economies of scale have continually led to the enlargement of holdings. (In 1986, their average size was : Flemish Belgium - 9.62 ha.; Walloon Belgium - 23.93 ha.).

It is the regions of greatest natural fertility which stand out most, with their system of exacting crop production; for example, wheat and sugar beet grown on the farmlands of the loessial plateaux. This zonal division between field crops and pastures is very typical. Where the environment is less favourable for cash crops, the arable lands are likely to be given over to fodder crops, including cereals used for feed. Where conditions are less favourable again, because of poor drainage, slope or harsh climate, grass takes over. One can refine this analysis further : for example, the polderlands show mixed use, with both cereal-growing and pasturage, based on well-recognised variations of soil and topography; the sandy plain of Flanders supports mainly fodder crops and, in particular, pastures.

Over the years, however, certain types of agricultural production have developed around particular nodal areas, from which they have spread out concentrically. This is the case with two grassland areas in High Belgium : a region of pastoral monoculture which has developed in the northeastern Ardennes, under the influence of the old pasture core area in the neighbouring Pays de Herve, and a second zone located at the extreme western end of the Fagne depression, adjoining a grassland region of France, on the other side of the frontier, known as the Thiérache.

Another case in point is horticultural production, formerly to be found around the cities which provided it with markets, and today organised around cooperative auction centres, which act as economic catalysts : in the market-gardening areas of Malines and Wavre-Sainte-Catherine; around Roulers; around Hoogstraten; in the flower-growing area of Lochristi, near Ghent; in the orchard area around St-Trond, etc. This nodal distribution occurs, however, only within the limits set by the soil and growing requirements of the crops in question : light, sandy soils for fine vegetables, and mainly sandy loess for fruits, so that the environmental zonation is not entirely eliminated.

So far as livestock raising is concerned, the logic of the regional pattern is certainly zonal, but in two different ways. On the one hand cattle-raising, more or less intensive, is linked with the output of fodder crops and pasture grass, and in most regions is one of the basic elements in the farm economy. Only in a few exceptional cases is it less important than cash-crop production - on the most fertile loess lands, for example, or in the horticultural areas. On the other hand, pig and poultry farming are unrelated to local crop production; they are a kind of non 'soil bounded farming'. They are based on flour or concentrated

feedstuffs processed by the feed industry from imported raw materials. They are located, consequently, mainly in regions within reach of these imported and processed feeds; that is, areas with access to ports of entry or canals. In Flanders and the Campine they accompany and, in some areas, take precedence over, cattle raising.

Another approach to the regional diversity of agriculture is in terms of its intensity. The areas of the most intensive farming are, in general, areas where production yields a high value-added - livestock-raising in pens and sheds, for example, or horticulture; types of production which are possible in the case of small holdings, where there is a larger than average labour force, and that force attached to the land by long tradition. These conditions typically apply in most Flemish areas in which birth rates are high and industrialisation has come late. By contrast, in most of the Walloon lands the abandonment of agriculture for industry and commerce since the 19th century, coupled, as we have seen, with a very pronounced rural exodus from the most isolated areas, has produced a marked reduction in the farm population, an increase in the size of holdings, and a corresponding trend towards simplified and more extensive types of farming. The marked gardening and the mixed farming practised in the last century by all classes of workers there have disappeared. The density of cattle stocking has increased less rapidly than in the Flemish Region; it is becoming more extensive as can be seen, for example, in the replacement of milking cows by cows feeding their own calves - a trend encouraged, it has to be added, by the milk quota system of the E.E.C. Cattle-raising for beef and veal runs parallel with this. A further example from Walloon agriculture would be that of market gardening; the sole production of this type which is developing in Walloon Belgium is vegetables for preserving (particularly *petits pois*). These are grown in open fields on large, mechanised farms in the Hesbaye or Condroz (Ch. Christians, Et. Van Hecke).

So far as *rural settlement and the structure of holdings* are concerned, contemporary changes and modernisation have served to bring out the old regional contrasts. What we have are two main types of settlement; these are the dispersed pattern of the north and concentration in villages and hamlets in the south, the two separated by a line running approximately through Tournai, Nivelles, Brussels, Louvain, St Trond, Maastricht and along the valley of the Meuse. South of that line, however, the Pays de Herve and the eastern tip of the High Ardennes belong to the regions of dispersed settlement. This is not to say that any part of Belgium is actually devoid of villages : they form a network of central places, offering the most local services, even in the regions of dispersed settlement, and they play an important part in economic life.

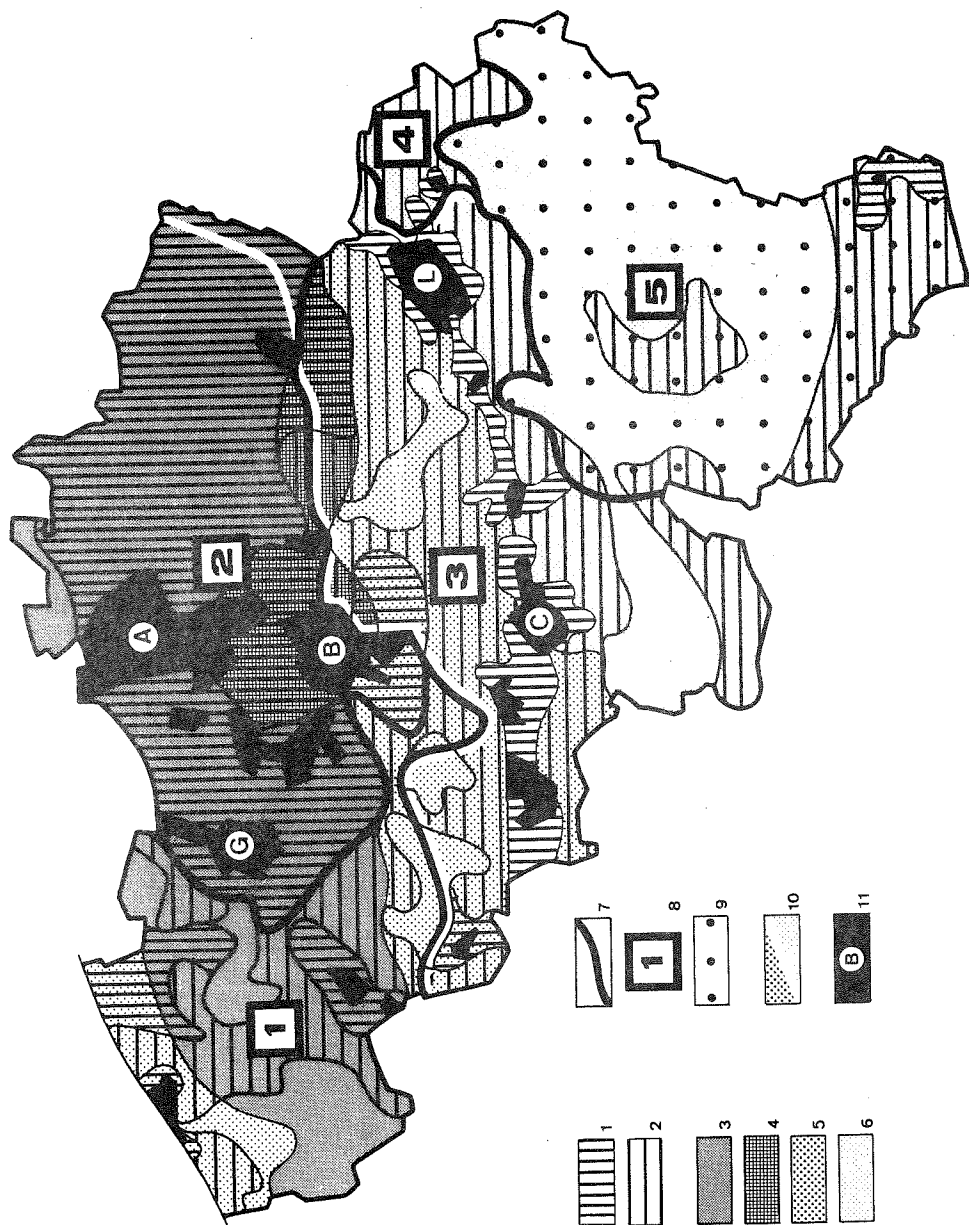
To the twofold division just referred to we can add another difference between regions which closely corresponds with it : that between areas with an enclosed landscape of hedges and lines of trees (planted rather than natural woodland) bounding the fields and, on the other hand, landscapes with wide, open horizons and fields without fences. However, the boundary line between these two landscapes

## Map 9.- TYPES OF RURAL OCCUPANCE

1. Areas morphologically and functionally urbanised (suburbs of cities and continuous urbanisation).
2. Areas rural in form but urban in function (with some spread of non-farm rural housing). Unstippled areas : completely rural.
3. Areas of small holdings with mixed farming, intensive cattle-raising and feedlots.
4. Smallholdings with intensive, specialised crops (market gardens, orchards).
5. Medium to large holdings, predominantly arable, with secondary cattle-raising.
6. Small, medium and large holdings where pasture is dominant or even exclusive, and with cattle-raising, intensive or otherwise.
7. Boundary between types of service centre available to provide basic services.
8. Areas numbered according to the type of service centre available for providing basic services :
  - 1 and 4 : Existence of independent nuclei, large and small, providing basic services; 2 : ditto, with medium and large nuclei; 3 : small and medium-sized, with small non-independent centres also providing basic services; 5 : small towns with very small, non-independent centres providing basic services.
9. Mainly agricultural communes which are very badly provided with basic services.
10. Boundary between areas of nucleated settlement (in the centre) and dispersed settlement (in the north and east).
11. Urban areas (major agglomerations indicated by capital letters : A - Antwerp, B - Brussels, C - Charleroi, G - Ghent, L - Liège).

(Source : CHRISTIANS, Ch., Les types d'espaces ruraux en Belgique, in Hommes et Terres du Nord, 1982-1, p. 23).

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## Map 10.- URBAN REGIONS AND URBAN FRAMEWORK

Urban Hierarchy

1. Local centre
2. Regional centre
3. Major agglomeration

Population


4. Less than 5,000
5. 5,000 but under 20,000
- 6-7. 20,000 but under 60,000
8. 60,000 but under 125,000
9. 125,000 but under 500,000
10. 500,000 but under 1 million
11. More than 1 million

Urban Functions

12. Predominantly servicing centre
13. Both service and industrial functions
14. Predominantly industrial

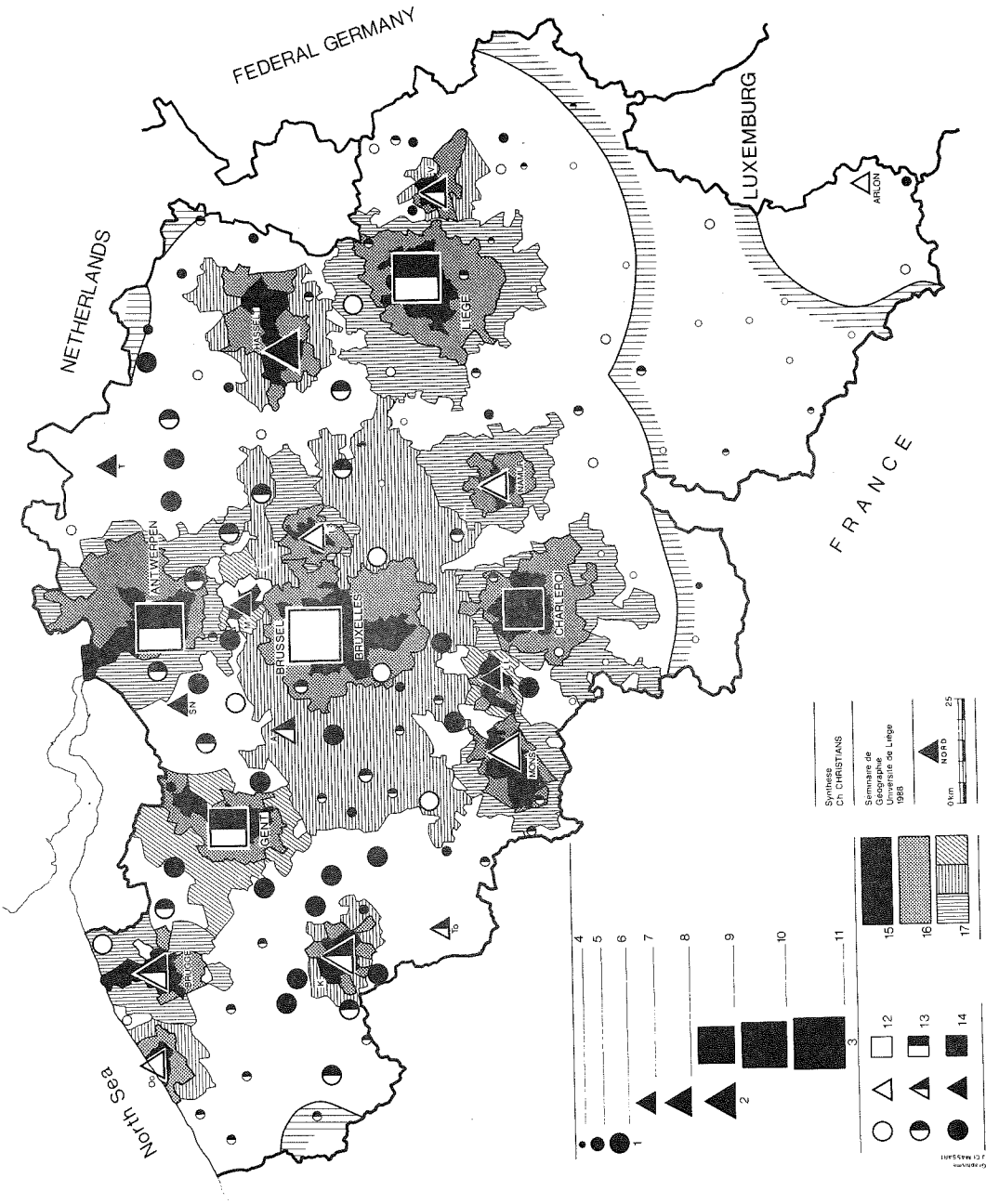
Urban Areas

15. Central city and urban agglomeration
16. Suburban spread
17. Commuting zone

 Outside area of urban attraction

(source : Ch. CHRISTIANS, 1988, based on H. VAN DER HAEGEN & M. PATTYN, Les régions urbaines, in Bulletin de Statistique, 1979, No. 3, with separate map, and on M. PATTYN, Map of Types of Belgian Towns according to Their Economic Activity, in H. VAN DER HAEGEN, M. PATTYN & C. CARDYN, The Belgian Settlement System, Acta Geog. Lovaniensia, No. 22 (1982), p. 341).

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actually includes part of the region of dispersed settlement within the area of open fields, since the line bends north, via Tournai, Ghent, Malines, Diest, Tongres and along the valley of the Meuse northwards. But by and large geographical studies have enabled us to establish a set of connections which generally holds good : dispersed settlement, landscapes of enclosure, individual farms grouped in continuous blocks around isolated farhouses; this on the one hand and, on the other, nucleated settlement, open fields, and individual holdings in scattered strips or parcels. The explanation of these contrasts is to be found in the contrasting methods of land appropriation and exploitation of the period before the French Revolution of 1789; that is, under the *Ancien Régime* and as governed by rural custom. Thus we have the opposing forms of *individual* exploitation (marking off and enclosing the properties) and *communal* exploitation (clustered settlements, open arable fields, allowing the communal livestock free grazing once the harvest was in, and allotment of scattered parcels to individuals, so as to share out the better and poorer land equally among all). Such is the legacy of history on these farm lands, and its conditions even today the advantages and disadvantages of these systems of settlement.

The farmer finds the dispersed and consolidated pattern of holding better for his purposes, but not the enclosure of his fields which goes with it, for the latter is an obstacle to mechanisation of his operations. On the other hand, a rural non-farm population can be accommodated more satisfactorily in an area of nucleated settlement. If one bears in mind that dispersed settlement is a particular feature of the Flemish Region and is, moreover, part of the pattern into which must be fitted the intense urbanisation and industrialisation that are taking place there, one can readily conceive of the difficulty of planning the use of space so as to maintain a coherent agriculture. One must think in terms of 'open space' rather than 'rural space'. By contrast, the slight growth of a rural non-farm population in Walloon Belgium is focussed on the villages, and that is better - in spite of the way in which new housing spreads out along the roads leading away from the village centre (O. Tulipe, M. Lefèvre, A. Petit, F. Dussart, and Ch. Christians). It will be necessary to return later to this topic, to deal with the many detailed regional variations which govern the arrangement of these fundamentals of the rural landscape.

Planning measures and, in particular, those for rural planning are going to vary considerably in their regional application. If we take as an example the measures for land reform, which are aimed at reorganising farmlands with a view to increasing production, then in the regions of open fields the basis of the programme will be to reduce the fragmentation and scatter of land parcels while, in areas of enclosure, what will be needed is the removal of field boundaries, together with action to improve drainage since (as in Flanders and the Campine), these are essentially the wetter lands.

Let us close this section by referring to the features of the *forest cover*, which represents 600,000 ha. and more, or over 20% of the nation's territory. Four-fifths of the forested area are in the Walloon Region, in High Belgium. The native forest, like the managed successor forests of today, is a mixture of deciduous species, mainly



oaks in Low and Middle Belgium, the Condroz and the fringes of the Ardennes, and beeches in the Ardennes proper, as well as in Middle Belgium.

Afforestation was carried out, primarily in the 19th century, by planting over heaths and moorland in the two least fertile environments of the country - the Campine and the Ardennes. These heaths originated on land that was burned over and then planted with snatch crops, or on grazing land mainly stocked with sheep. Afforestation introduced principally Scots pine, Corsican pine and larch to the Campine, and spruce to the Ardennes. In addition, poplars have been widely cultivated on the humid lands in the centre of the country (P. Gathy).

In summary, the distribution of woods and forests is, in a sense, the obverse of that of agriculture : forestry is found where the agricultural possibilities are least favourable.

### 2.3.- GEOGRAPHICAL REGIONS AND REGIONS OF URBAN INFLUENCE

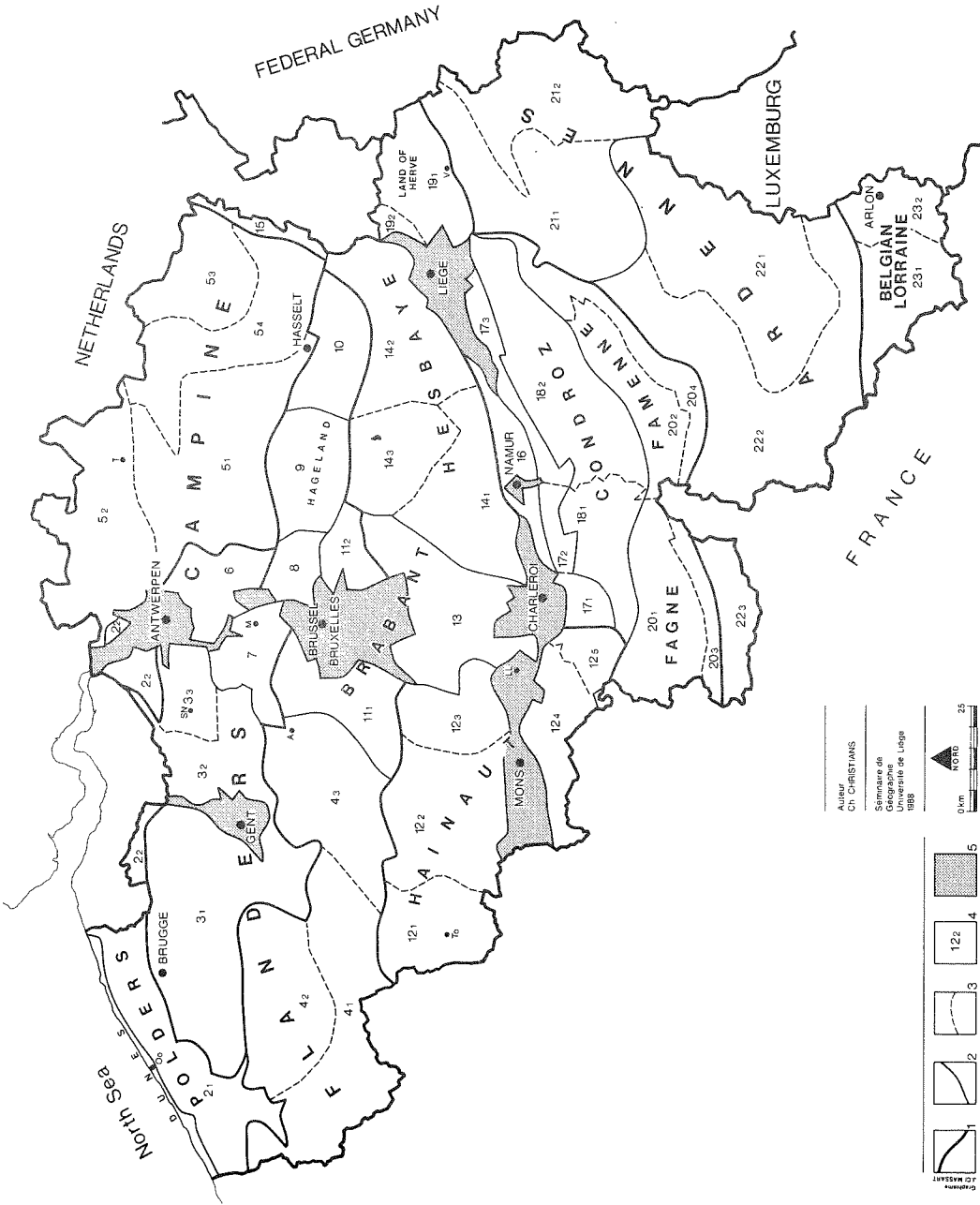
The division of the country into *geographical regions* is based, in the first instance, on a hierarchy of biophysical elements of the environment. Without falling into a broad determinism, we have tried to relate the biophysical to the processes of urbanisation and industrialisation, a relationship imposed by the facts of location and regional accessibility. We have also commented on the most obvious influences of the biophysical environment on agriculture and forestry, including the crop production traditionally associated with them and including, also, the most recent agricultural developments. In every case we have had, unavoidably, to take account of the catalytic effects of changes in the population and in its outlook. In sum, the geographical regions are, on their own level and defined by the criteria mentioned above, homogeneous areas. They are divided, in their turn, into sub-regions where the level of homogeneity is higher still. The landscapes express their structural indicators and their essential functions.

If, however, we wish to obtain an idea of regionalism on the basis of a *division into urban spheres of influence*, as represented by services and employment, the pattern is different, even though the realities on which the homogeneous regions are based retain a certain influence. The basic variable here is the possibility of interaction between the urban pole and its hinterland, which depends not merely on transport routes but on the means of transport available. "Depending on the quality of service being sought, it is necessary to travel either to the nearest small town, or to the regional centre, or even to the capital" (J.A. Sporck).

It is of interest to note that the regions served by the major regional cities (the four agglomerations of Antwerp, Ghent, Liège and Charleroi, each of which has a population of over 350,000) fit remarkably well with the linguistic boundary, with the influence of Brussels, however, spreading on either side of this line. Also worthy of note is the very marked southward extension of the spheres of influence of Charleroi and Liège - and, for that matter, of Brussels, which stretches

## Map 11.- GEOGRAPHICAL REGIONS

- |   |   |
|---|---|
| 1. Boundary of groups of regions of regions or sub-regions    | <u>Hesbaye</u>  |
| 2. Regional boundary  | 14.1. The Namur Hesbaye   |
| 3. Sub-regional boundary                                      | 14.2. The Liege hesbaye   |
| 4. Reference numbers  | 14.3. The Hannut-Tirlemont Hesbaye  |
| 5. Urban regions  | <u>Maasland</u>   |
|   | 15. Maasland  |
| <u>Reference numbers and names of regions and sub-regions</u> | <u>The Condroz Region</u>   |
| 1. <u>Dune Areas</u>  | 16. The Sambre-Meuse Valley   |
| <u>Polders</u>  | <u>The Condroz Ardennes</u>   |
| 2.1. Maritime polders   | 17.1. Pays d'Acoz   |
| 2.2. Polders of the Scheldt Estuary                           | 17.2. Marlagne  |
|   | 17.3. The Condroz Ardennes  |
| <u>Flanders</u>   | <u>The True Condroz</u>   |
| <u>Flanders : Sandy areas</u>                                 | 18.1. Western Condroz (Entre-Sambre-et-Meuse)   |
| 3.1. Sandy Flanders: western section                          | 18.2. Condroz   |
| 3.2. Sandy Flanders: eastern section                          |   |
| 3.3. Waasland   | <u>Entre-Vesdre-et-Meuse</u>  |
| <u>Flanders: Sandy-loess areas</u>                            | 19.1. Pays de Herve   |
| 4.1. Sandy-loess lands of Flanders: western section           | 19.2. Dalhem terraces   |
| 4.2. Roulers division   | <u>The Famenne Region</u>   |
| 4.3. Sandy-loess lands of Flanders: eastern section           | 20.1. The Fagne   |
|   | 20.2. The Famenne   |
| <u>Campine</u>  | 20.3. Western Calestienne, Entre-Sambre-et-Meuse  |
| 5.1. Central Campine  | 20.4. The Calestienne   |
| 5.2. Northwest Campine  |   |
| 5.3. The Campine Plateau                                      | <u>The Ardennes</u>   |
| 6. Improved lands of the Campine                              | <u>Northern Ardennes</u>  |
| <u>Transitional Regions</u>                                   | 20.1. Northeastern Ardennes   |
| 7. Little Brabant   | 20.2. The High Ardennes   |
| 8. The Brabant Campine  | <u>Central and southern Ardennes</u>  |
| 9. Hageland   | 22.1. Plateau of the central Ardennes   |
| 10. The humid Hesbaye   | 22.2. Forest border of the Ardennes   |
| <u>The Brabant Region</u>                                     | 22.3. Riezes and Thierache  |
| 11.1. Flemish Brabant: western sect.                          |   |
| 11.2. Flemish Brabant: eastern sect.                          | <u>Belgian Lorraine</u>   |
| 13. Walloon Brabant   | 23.1. The Gaume   |
|   | 23.2. Pays d'Arlon  |
| <u>The Hainaut Region</u>                                     | (Based on Ch. CHRISTIANS, <u>Les degrés de priorité des remembrements ruraux en Belgique</u> , Revue de l'Agriculture, 1971, Nos. 11-12, with separate map, modified 1988). |
| 12.1. The Tournaisis  |   |
| 12.2. Central Hainaut   |   |
| 12.3. The Soignies area                                       |   |
| 12.4. The High Country (Haut-Pays)                            |   |
| 12.5. Southern Thudinie                                       |   |

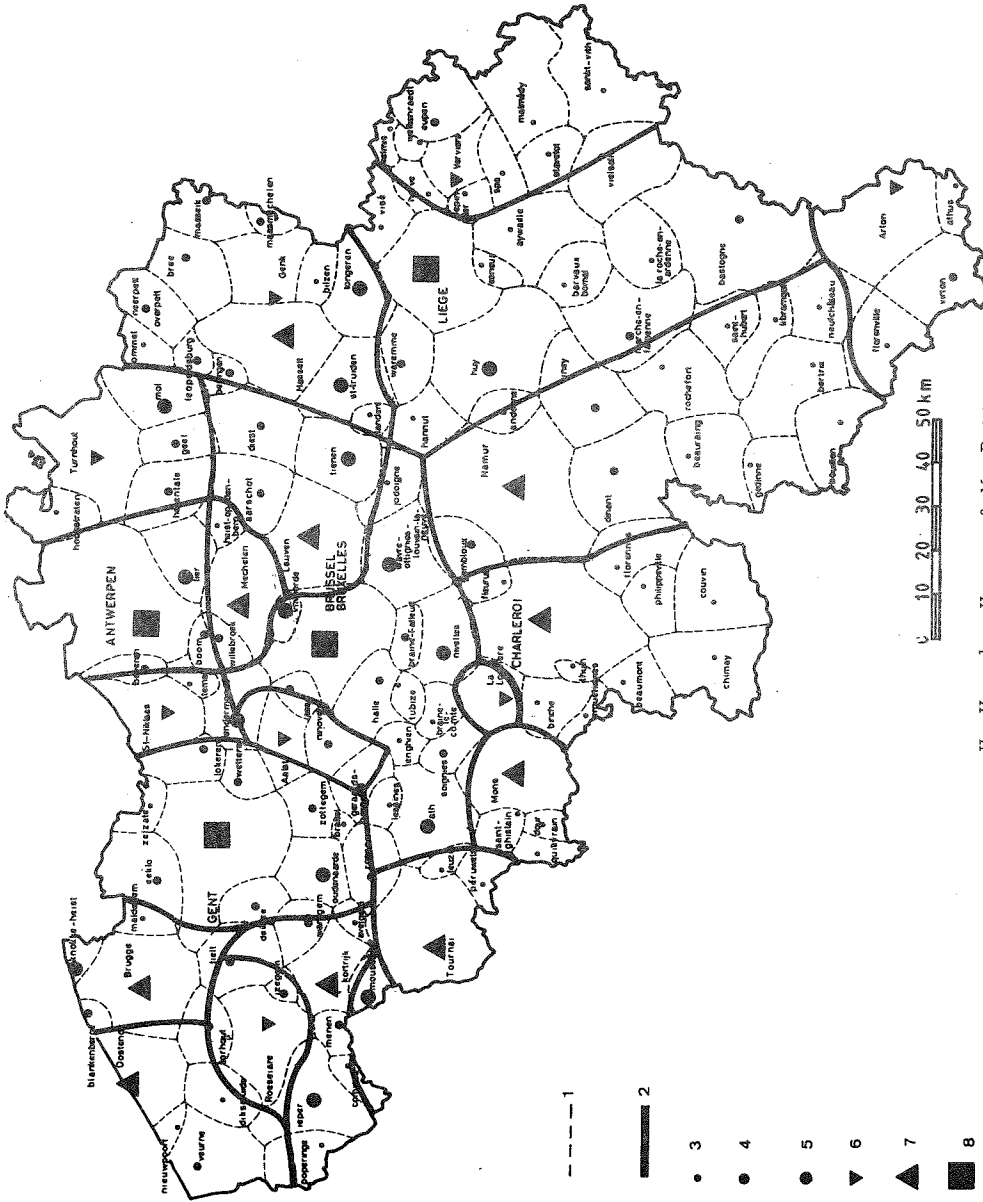


Map 12.- HIERARCHY AND SERVICE AREAS OF THE BELGIAN CITIES

1. Range of frequent urban relations
2. Range of regional relations
3. Small city
4. Well-equipped small city
5. Very well-equipped small city
6. Regional city
7. Well-equipped regional city
8. Major city

(Source : VAN DER HAEGEN, M. PATTYN and C. CARDYN, The Belgian Settlement System, Acta Geographica Lovaniensia, 22-1982, p. 283).

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## POPULATION OF THE MAJOR CITIES AND THEIR SERVICE AREA

	Agglomeration or centre (1)	Service area (except 1) (2)	Total (1+2) (3)	% Total Service area/ Agglomeration or centre (% 3/1)
1. Bruxelles/Brussel	1 200 000	2 723 636	3 923 636	327
2. Antwerpen	750 000	960 702	1 710 702	228
3. Liège	550 000	668 668	1 218 668	222
4. Gent	350 000	1 465 264	1 815 264	519
5. Charleroi	350 000	302 049	652 049	186
TOTAL	3 200 000	6 120 319	9 320 319	-

## POPULATION OF THE MAJOR CITIES AND THEIR SERVICE AREA

	Centers (1)	Service area (except 1) (2)	Total (1+2) (3)	% Total Service area/ Centre (% 3/1)
1. Oostende	75 000	143 031	218 031	290
2. Brugge	105 000	184 441	289 441	276
3. Gent	350 000	474 580	824 580	236
4. Kortrijk	130 000	365 009	495 009	381
5. Sint-Niklaas	65 000	136 711	201 711	310
6. Aalst	60 000	259 476	319 476	533
7. Antwerpen	750 000	333 937	1 083 937	145
8. Turnhout	50 000	160 320	210 320	421
9. Hasselt	45 000	568 919	613 919	1 364
10. Leuven	100 000	282 103	382 103	382
11. Mechelen	90 000	142 619	232 619	259
12. Bruxelles/Brussel	1 200 000	491 206	1 691 206	141
13. Tournai	50 000	187 343	237 343	475
14. Mons	75 000	207 498	282 498	377
15. La Louvière	65 000	146 876	211 876	326
16. Charleroi	350 000	232 029	582 029	166
17. Namur	75 000	300 236	375 236	500
18. Liège	550 000	295 358	845 358	154
19. Verviers	80 000	134 109	214 109	268
TOTAL	4 265 000	5 045 801	9 310 801 (1)	-

Source : SPORCK, J.A. & CHRISTIANS, Ch. (1976), L'organisation régionale de l'espace en Belgique et au Grand-Duché de Luxembourg, Revue géographique de l'Est, Nancy, 3/4, pp. 121-150.

TABLE Denomination and classification of the 135 urban centres in Belgium according to their classification in the industrial typology.

Typology classes	Major agglomerations	Regional towns	Small towns
Centres of big industry	FI : Gent W : Mons	FI : Mol, Willebroek W : Tubize, Comines, Fleurus, La Louvière, Lessines, Saint-Ghislain, Soignies, Herve, Visé, Welkenraedt, Andenne	FI : Boom, Geel, Lier, Vilvoorde, Temse, Bree, Genk, Lommel W : Braine-le-Comte, Dour, Pépinster, Aubange, Couvin
Centres specialised in metalwork	Br : Berchem-Stergaathe, Forest		
Industrialised towns and centres	FI : Antwerpen W : Charleroi Br : Anderlecht, Evere, Ganshoren, Koekelberg, Uccle	FI : Leuven, Mechelen, Turnhout, Brugge, Hasselt W : Tournai, Verviers	FI : Herentals, Aarschot, Asse, Tienen, Ieper, Nieuwpoort, Rooseleare, Sint-Truiden, Tongeren W : Nivelles, Wavre, Ath, Quévrain, Aywaille, Huy, Waremmes, Virton, Gembloux
Towns and centres with minority industrial function	W : Liège Br : Audergem, Brussels, Etterbeek, Ixelles, Jette, Molenbeek-St-Jean, St-Gilles, St-Josseten-Node, Schaerbeek, Watermael-Boitsfort, Woluwe-St-Lambert, Woluwe-St-Pierre	FI : Oostende W : Arlon, Namur	FI : Diest, Blankenberge W : Jodoigne, Chimay, Eupen, Spa, Marche-en-Famenne, Libramont-Chevigny, Dinant
Urban centres specialised in light industry		FI : Kortrijk, Aalst, Sint-Niklaas	FI : Halle, Avelgem, Izegem, Menen, Poperinge, Tielt, Veurne, Waregem, Brakel, Deinze, Dendermonde, Eeklo, Geraardsbergen, Lokeren, Ninove, Oudenaarde, Ronse, Wetteren, Zottegem W : Binche, Leuze, Mouscron, Péruwelz, Malmédy
Communes slightly specialised in light industry			FI : Heist-op-den-Berg, Hoogstraten, Diksmuide, Torhout, Beveren, Maldegem, Beringen, Bilzen, Maaseik, Maasmechelen W : Sankt-Vith, Hertrix
Small communes with presence of industry			
Not-industrialised communes			FI : Knokke-Heist, Zelzate, Leopoldsburg, Neerpelt W : Braine-l'Alleud, Beaumont, Enghein, Erquehennes, Thuin, Esneux, Hannut, Kelms, Stavelot, Bastogne, Bouillon, Durbuy, Florenville, La Roche-en-Ardenne, Neufchâteau, Saint-Hubert, Vielsalm, Beauraing, Ciney, Florennes, Gedinne, Philippeville, Rochefort

**NB**  
we have distributed the urban centres into three big regions : FI = Flanders; W = Wallonia; Br = Brussels.

out a long arm reaching to the very southernmost tip of the country. This is equally the case when we examine the second rank of urban centres; that is, those where there is a population of at least 50,000. It is true of Namur and Verviers, as also of Liège and Charleroi, at the level of second-order functions. None of these regional centres of the Walloon country has any competition from towns further south. The manifest weakness of the central place network in High Belgium and, particularly, in the Ardennes has already been pointed out as one of the consequences of the general poverty and poor accessibility of these areas : there is an interesting convergence here between the pattern of geographical regions and that of urban regions. As long ago as 1963, development plans called for the creation, from the ground up, of a new town in the Ardennes to provide the level of regional services that was lacking.

By the same token, in the Westhoek region, the extension of Courtrai's sphere of influence into the extreme southwest of Flanders poses the same problem of insufficient urban services in a geographically disadvantaged sub-region. In the case of the Westhoek, it is proposed to raise Roulers to the rank of a regional centre, in order to strengthen the provision of central-place services north and west of Courtrai (J.A. Sporck). This regional-centre status is 'particularly attractive since it ensures that there shall be a centre of appreciable size, surrounded by a hinterland with a population of 100,000-500,000 inhabitants, sufficient to form a labour market of adequate size and variety, but concentrated within a relatively small perimeter which permits - or should permit - fairly easy access, including daily access, to work in the centre' (J.-A. Sporck). In practice, the distance to the centre should be a maximum of 50 km, or in nearly every case a journey of less than one hour.

From the point of view of urban ranking as such, 'the part of Belgium's national territory which is tributary to Brussels, even if considered in competition with the major regional cities, is truly impressive. Brussels' zone of influence creeps in between those of Antwerp and Liège, of Liège and Charleroi - with a long southward extension to the very borders of the country - of Charleroi and Ghent, and it very nearly succeeds in thrusting its way between those of Ghent and Antwerp also. The capital's zone of attraction contains almost half the population of Belgium... It is apparent, then, that the other major cities do not represent true *métropoles d'équilibre*, since their centralising function is overridden by the attraction of Brussels even in areas where Brussels is actually much further away...'. On the other hand, 'the small size of the population looking to Charleroi as its regional city places the latter below the rank of true major cities. We have therefore proposed to consider the whole group of towns, Mons - La Louvière - Charleroi, as forming a linear city (with a length of 35 km) and to structure and equip it as such' (J.A. Sporck). These problems will require further consideration in the regional sections that follow in this account.

In a general way, the urban spheres of influence are most often orientated in a north-south direction and, because population densities are higher in the north of the country than the south, hinterlands for comparable ranks of centre tend to be smaller in area in the Flemish Region than in the Walloon.