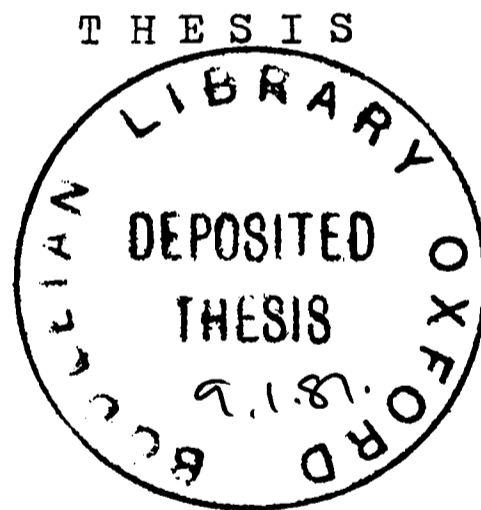


RURAL AND URBAN PERSPECTIVES

on

POPULATION MOBILITY IN FRANCE  
with particular reference to Isère

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submitted for the Degree of Doctor of Philosophy  
of Oxford University

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V O L U M E 1

RURAL AND URBAN PERSPECTIVES ON POPULATION  
MOBILITY IN FRANCE WITH PARTICULAR REFERENCE  
TO ISERE

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ABSTRACT

Migration studies are both extensive and fragmentary, reflecting a wide variety of aims and methodology. In recent years an abstract statistical approach has dominated migration study which tends to concentrate on the distance and direction of migrants. This thesis aims to extend this approach to investigate more fully the structural variables of the migration environment. The study of the migration context is supplemented by analysis of the characteristics of migrants drawn from a sample survey of heads of households in Grenoble; to give a more complete and balanced picture of the complexity of migration.

The examination of net migration balances has been extended to study the spatial pattern of migration by Principal Components Analysis of gross flows at a national level. Factors of the migration environment selected for further study were demography, agriculture and amenities. Agricultural improvement is seen to act as an intervening variable between population pressure and outmigration in the early years of this century, while in more recent years the level of available amenities appears the dominant factor influencing migration.

The department of Isère was selected for further study because of the presence within it of the rapidly growing city of Grenoble which in the post-war period emerges as a focus for migrants of national importance. Furthermore the diversity of the natural environment within Isère provides a variety of source and destination areas. The areas of population loss were studied by means of Automatic Interaction Detection which determined the factors important in explaining out-migration and provided a basis for the classification of those areas. The types of origin and destination areas are related to the characteristics of the migrants themselves, drawn from a sample of individual census returns from the 1968 census. The varied environments within Isère and France as a whole produce different types of migrants with varying characteristics and aspirations; who seek out different areas of the city in which to settle. The characteristics of the migrants are drawn from a sample survey of individual census returns from the 1968 census.

## ABSTRACT

Migration studies are both extensive and fragmentary, reflecting a wide variety of aims and methodology. In recent years an abstract statistical approach has dominated migration study which tends to concentrate on the distance and direction of migrants. This thesis aims to extend this approach to investigate more fully the structural variables of the migration environment. The study of the migration context is supplemented by analysis of the characteristics of migrants drawn from a sample survey of heads of households in Grenoble; to give a more complete and balanced picture of the complexity of migration.

The examination of net migration balances has been extended to study the spatial pattern of migration by Principal Components Analysis of gross flows at a national level (Chapter 2). The use of this technique in a novel context of national migration flows demonstrates the changing hinterlands of the major cities over time, and the reduction of the hinterland of Paris as return migrations, inter-urban movements and decentralization complicate the pattern of flows in recent years.

This study of the spatial flows of migration, while not examining specifically the contribution of distance, shows that people are less restricted by distance than formerly, and also demonstrates the effects of distance in curtailing the hinterlands of the major regional centres.

However, it was felt that distance cannot provide an adequate surrogate for a study of the structure of the environment in which migration occurs, and so further study of both rural and urban aspects of the migration context was undertaken (Chapters 3 and 4).

The factors considered to be of particular importance and so selected for further study were demography, agriculture and amenities; natural growth defines the population theoretically available for migration; agricultural potential defines the population optimum in terms of use of limited natural resources in relatively self-contained communities; while socio-economic factors illustrate the quality of life which has become a factor of increasing importance in the years since the Second World War.

The relationship between natural growth of population and outmigration is a complex one. The areas of greatest population growth 1891-1931 were the Massif Central and the Breton departments but these did not immediately exhibit the greatest loss of population, as they were able to provide increased employment by the improvement and extension of domestic agriculture. On the other hand most outmigration occurred from the areas where natural resources limited the available agriculture to livestock rearing and polyculture, so restricting the creation of further agricultural employment.

Post-war the agricultural structure of different areas became of less importance and the socio-economic variables dominated migration flows, with in-migration occurring to areas of better amenities where health, housing and education services exist at a higher level. This level of amenities available appears the dominant factor in the direction of movement whether at the national level or at the local level within Isère and the city of Grenoble.

The department of Isère was selected for further study (Chapter 5) because of the presence within it of the rapidly growing city of Grenoble which in the post-war period emerges as a focus for migrants of national importance. Furthermore the diversity of the natural environment within Isère provides a variety of source and destination areas. The areas of population loss were studied by means of Automatic Interaction Detection (Chapter 6) which determined the factors important in explaining out-migration and provided a basis for the classification of those areas.

Within Isère the role of distance as an explanation of migration appears secondary to more traditional geographic factors such as altitude, the poverty of the Alpine environment, and the need for a minimum threshold level of population and services. Outmigration is particularly marked from small Alpine communes; when this is combined with overcrowding and a lack of modern

facilities, then the outmigration is severe, reaching 5 or 6% per annum, showing at the local level the importance of adequate modern amenities.

The varied environments within Isère and France as a whole produce different types of migrants with varying characteristics and aspirations; who seek out different areas of the city in which to settle (Chapter 7).

Migrants to Grenoble consist of two main categories; migrants from the Alpine communes represent the remnants of the traditional rural-urban movement consisting mainly of lesser qualified people to the wider employment opportunities of a larger city. On the other hand there is a more recent movement of inter-urban migrants with high aspirations and qualifications whose migration is likely to be only one step in their life cycle and career development (Chapter 8).

Throughout this study the use of statistical techniques has been subordinated to the data available and to the aim of providing a more complete understanding of migration, and has not been seen as an end in itself. Use has been made of relatively simple but under-utilized techniques when appropriate such as contingency tables, Mann-Whitney 'u' tests, migration velocities and percentage difference. Principal Components Analysis has been used to extract the major similarities between gross migration flows at different periods in time, while the comparatively

new technique of Automatic Interaction Detection has been used to analyse the most important factors in determining out-migration from 323 communes of Isere. This study has adopted a broad perspective both in time and space in order to provide a more comprehensive and complete understanding of the migration process.

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The 1968 individual census returns and other sources were provided by the Departmental Archives in Grenoble;

Agricultural statistics were obtained from a variety of sources, for recent years from the Library of the Ministry of Agriculture, Whitehall Place, and for detailed information from M. G. Martin at the Direction Départementale de l'Agriculture in Grenoble;

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Rural and Urban Perspectives on Population Mobility in France with particular reference to Isère

Chapter 1. Introduction

- 1.0. General introduction
- 1.1. Migration concepts
- 1.2. Relevant migration research: a summary
- 1.3. Research on migration in France
- 1.4. Introduction to the data sources
- 1.5. The study area
- 1.6. The aims of this thesis

Chapter 2. Spatial patterns of French migration: gross flows

- 2.0. Introduction and method of analysis
- 2.1. 1891: the pattern becoming established
- 2.2. 1891-1911: the changing order
- 2.3. 1946: the post-war situation
- 2.4. 1954-62: the new patterns established
- 2.5. 1962-68: regional analysis
- 2.6. Conclusions

Chapter 3. Agricultural development and population change

- 3.1. Agricultural development and population change
- 3.2. The agricultural backcloth
  - a. The first agricultural revolution: the sixteenth century to 1789
  - b. The emergence of scientific agriculture: 1789-1891
  - c. Regional disparities in agricultural development before 1891
  - d. 1892-1945: Agricultural depression
  - e. The second agricultural revolution
- 3.3. Agriculture and migration
  - a. The agricultural data base
  - b. The delimitation of agricultural areas
  - c. Agricultural areas and out-migration

## Chapter 4. The changing migration context

- 4.0. The changing migration context: introduction
- 4.1. The demographic context
- 4.2. Responses to population pressure: out-migration or agricultural improvement?
- 4.3. Amenities: housing, health and education
- 4.4. Summary and conclusion: areas of in-migration and out-migration

## Chapter 5. Population change in Isère

- 5.1. Introduction
- 5.2. Internal Diversity of Isère
  - 5.2.1. The Bas Dauphiné
    - a. Ile Crémieu
    - b. Les Terres Basses
    - c. Les Terres Froides
  - 5.2.2. The Rhône Valley
  - 5.2.3. The valley of the Isère
  - 5.2.4. The Pre-Alpine massifs
    - a. The Chartreuse
    - b. The Vercors
    - c. The Southern plateaux
    - d. The Matésine
  - 5.2.5. The high massifs
- 5.3. Population change in Isère
  - a. Communes growing in population
  - b. Communes losing population
- 5.4. Migration in Isère
  - a. Migration from abroad
  - b. Migration relationships with the rest of France

## Chapter 6. Areas of out-migration in Isère

- 6.0. Introduction
- 6.1. Out-migration and natural change 1954-75
- 6.2. Analysis of characteristics of out-migration areas: A.I.D.
- 6.3. Characteristics of out-migration areas: Conclusions

Chapter 7. Destination areas: the case of Grenoble

- 7.0. Introduction
- 7.1. The growth of Grenoble
- 7.2. The quartiers of Grenoble
- 7.3. In-migration to Grenoble
- 7.4. Reception areas within the city

Chapter 8. The migrants

- 8.0. The sample survey
- 8.1. Migrants from abroad
- 8.2. Migrants from the rest of France
- 8.3. Migrants from Isère
- 8.4. Conclusions

Chapter 9. Summary and Conclusions

Bibliography

Appendix 1. Correlation matrices of migration and socio-economic variables 1891 - 1968

Appendix 2. Agricultural improvements and machinery 1892-1970

## Figure Numbers in the Text

- 1.1. Migrant lifelines (after Wilson and Rees (1974))
- 1.2. The migration/age relationship (used in the simulation model of Cordey-Hayes and Gleave (1973))
- 1.3. Probability of migration and length of residence (after Herbst 1964)
- 1.4. France: areas of positive net migration selected dates 1891 - 1975
- 1.5. The Rhône-Alpes region
  
- 2.1. Component scores and loadings 1891
- 2.2. 1891 Departments sending migrants to major cities
- 2.3. Component scores and loadings 1911
- 2.4. Component scores and loadings 1946
- 2.5. Component scores and loadings 1954-62
- 2.6. Component scores and loadings 1962-68
  
- 3.1. The growth of French agricultural production 1790-1970
- 3.2. Distribution of permanent foreign workers c. 1930
- 3.3. Distribution of temporary foreign workers c. 1930
- 3.4. The ancient wooden "Chambige" or "Raballe" plough c.1900
- 3.5. S.A.F.E.R. activity 1970
- 3.6. IVDs 1972-74
- 3.7. Method of classification of farming areas
- 3.8. Agricultural typology 1892
- 3.9. Correlation matrix: agriculture 1892
- 3.10. Agricultural areas 1892: subsistence polyculture
- 3.11. " " " : cereals
- 3.12. " " " : livestock
- 3.13. " " " : intensive polyculture
- 3.14. Correlation matrix: agriculture 1929
- 3.15. Agricultural typology 1929
- 3.16. Agricultural areas 1929: subsistence polyculture
- 3.17. " " " : cereals
- 3.18. " " " : livestock
- 3.19. " " " : intensive polyculture

Figure Numbers in the text (contd.)

- 3.20. Correlation matrix: agriculture 1955
- 3.21. Agricultural typology 1955
- 3.22. Agricultural areas 1955 : subsistence polyculture
- 3.23. " " " : cereals
- 3.24. " " " : livestock
- 3.25. " " " : intensive polyculture
- 3.26. Correlation matrix: agriculture 1970
- 3.27. Agricultural typology 1970
- 3.28. Agricultural areas 1970 : subsistence polyculture
- 3.29. " " " : Cereals
- 3.30. " " " : livestock
- 3.31. " " " : intensive polyculture
  
- 4.1. Population growth of French major cities 1851-1968
- 4.2. Natural growth and migration 1891
- 4.3. a. Demographic areas 1891: natural growth
- b. " " " : net in-migration
- c. " " " : population pressure
- d. " " " : relict areas
- 4.4. Natural growth and migration 1931
- 4.5. a. Demographic areas 1931: natural growth
- b. " " " : net in-migration
- c. " " " : population pressure
- d. " " " : relict areas
- 4.6. Natural growth and migration 1954
- 4.7. a. Demographic areas 1954: natural growth
- b. " " " : net out-migration
- c. " " " : population pressure
- d. " " " : relict areas
- 4.8. Natural growth and migration 1968
- 4.9. a. Demographic areas 1968: natural growth
- b. " " " : net out-migration
- c. " " " : population pressure
- d. " " " : relict areas

Figure Numbers in the text (cont.)

- 4.10. a. Rental value of housing 1891
- b. Percentage of houses with rental value <20 francs
- 4.11. Farm dwellings in Morbihan c. 1929
- 4.12. a. Infant mortality 1891
- b.       "       "       1931
- 4.13. a. Illiteracy 1901: males >15 years
- b.       "       "       : females >15 years
- c. Illiteracy 1931
- 4.14. a. Causes of Death 1931, 1968: tuberculosis
- b.       "       "       "       "       "       : Bronchitis and pneumonia
- c.       "       "       "       "       "       : suicides
- d.       "       "       "       "       "       : cancer
- e.       "       "       "       "       "       : violent deaths
  
- 5.1. Traditional North/South divisions of France
- 5.2. Agriculture regions of Isère
- 5.3. Districts of Isère
- 5.4. Dry stone walling
- 5.5. Maize-drying cages
- 5.6. The Southern plateaux and valleys: field sketch
- 5.7. Isère 1851-1975: total population change
- 5.8. a. Population density 1891
- b.       "       "       1921
- c.       "       "       1946
- d.       "       "       1962
- e.       "       "       1968
- f.       "       "       1975
- 5.9. Isère: histograms of commune population sizes 1891-1975
- 5.10. Communes which have grown in population 1891-1975
- 5.11. Communes growing mainly pre-1946
- 5.12. Population growth: communes growing pre-1946
- 5.13. Communes growing mainly post-1918
- 5.14. Communes growing mainly post-1946
- 5.15. Growth of communes around Grenoble
- 5.16. Growth of communes around Vienne

Figure numbers in the text (contd.)

- 5.17. Communes growing throughout the period except interwar
- 5.18. Growth of communes throughout the period except interwar
- 5.19. Communes showing continuous growth
- 5.20. Communes losing population
- 5.21. Communes losing population mainly pre-1914
- 5.22. " " " " " "
- 5.23. Communes losing population mainly pre-1946
- 5.24. " " " " " "
- 5.25. Growth of foreign population in Isère 1851-1975
- 5.26a. In-migration velocities to Isère 1891
- 5.26b. Out-migration velocities from Isère 1891
- 5.27. In-migration velocities to Isère 1911
- 5.28. Out-migration velocities from Isère 1911
- 5.29. In-migration velocities to Isère 1946
- 5.30. Out-migration velocities from Isère 1946
- 5.31. In-migration velocities to Isère 1954-62
- 5.32. Out-migration velocities from Isère 1954-62
- 5.33. In-migration velocities to Isère 1962-68
- 5.34. Out-migration velocities from Isère 1962-68
  
- 6.1. Communes which have lost population 1891-1975
- 6.2. Population change due to migration 1954-62
- 6.3. Natural growth 1954-62
- 6.4. Net migration 1962-68
- 6.5. Natural growth 1962-68
- 6.6. Net migration 1968-75
- 6.7. Natural growth 1968-75
- 6.8. Group 2: low altitude/low emigration communes
- 6.9. Group 3: high altitude/high emigration communes
- 6.10. Classification of communes losing population: A.I.D.
- 6.11. Group 8
- 6.12. Group 9
- 6.13. Group 14
- 6.14. Group 15
- 6.15. Group 26
- 6.16. Group 27
- 6.17. Group 13
- 6.18. Group 21

**Figure numbers in the text (contd.)**

- 5.17. Communes growing throughout the period except interwar
- 5.18. Growth of communes throughout the period except interwar
- 5.19. Communes showing continuous growth
- 5.20. Communes losing population
- 5.21. Communes losing population mainly pre-1914
- 5.22. " " " " " "
- 5.23. Communes losing population mainly pre-1946
- 5.24. Growth of foreign populations in Isère 1851-1975
- 5.25. In-migration velocities to Isère 1891
- 5.26. Out-migration velocities from Isère 1891
- 5.27. In-migration velocities to Isère 1911
- 5.28. Out-migration velocities from Isère 1911
- 5.29. In-migration velocities to Isère 1946
- 5.30. Out-migration velocities from Isère 1946
- 5.31. In-migration velocities to Isère 1954-62
- 5.32. Out-migration velocities from Isère 1954-62
- 5.33. In-migration velocities to Isère 1962-68
- 5.34. Out-migration velocities from Isère 1962-68
  
- 6.1. Communes which have lost population 1891-1975
- 6.2. Population change due to migration 1954-62
- 6.3. Natural growth 1954-62
- 6.4. Net migration 1962-68
- 6.5. Natural growth 1962-68
- 6.6. Net migration 1968-75
- 6.7. Natural growth 1968-75
- 6.8. Group 2: low altitude/low emigration communes
- 6.9. Group 3: high altitude/high emigration communes
- 6.10. Classification of communes losing population: A.I.D.
- 6.11. Group 8
- 6.12. Group 9
- 6.13. Group 14
- 6.14. Group 15
- 6.15. Group 26
- 6.16. Group 27
- 6.17. Group 13
- 6.18. Group 21

Figure Numbers in the text (contd.)

- 6.19. Group 20
  - 6.20. Group 24
  - 6.21. Group 25
  - 6.22. Group 28
  - 6.23. Group 29
  - 6.24. Group 30
  - 6.25. Group 35
  - 6.26. Group 34
  - 6.27. Group 32
  - 6.28. Group 33
- 
- 7.1. Population growth of Grenoble 1851-1975
  - 7.2. Grenoble: stages of development
  - 7.3. Grenoble quarters: mean age of household population
  - 7.4. Age of housing
  - 7.5. Houses with inside w.c.
  - 7.6. H.L.M. areas
  - 7.7. Distribution of 'ouvriers' (socio-professional group 6)
  - 7.8. Distribution of foreigners
  - 7.9. Classification of in-migration areas by A.I.D.
- 
- 8.1. Foreign-born population: Location Quotients
  - 8.2. a. Sources of migrants from the rest of France: birth-1968
  - b. " " " " " " " " " "
  - 8.3. Migrants from the rest of France: location quotients
  - 8.4. Migrants from large cities and Alpine areas: location quotients
  - 8.5. a. Sources of migrants from the rest of France: 1962-68
  - b. " " " " " " " " " "
  - 8.6. Migrants from the rest of France 1962-68: location quotients
  - 8.7. Migrants from Isère: location quotients
  - 8.8. Non-migrants: location quotients
  - 8.9. Intra-urban migrations 1962-68

Table Numbers in the text

- 1.1. Distance decay transformations
- 1.2. The vital transition and the mobility transition (after Zelinsky 1971)
- 1.3. Distance decay exponents: migration to the Rhône-Alpes (Pareto transformation)
- 1.4. Reasons for moving 1964
  
- 2.1. Variations explained by components
- 2.2. Component invariance 1891-1962
  
- 3.1. Agricultural areas according to Arthur Young 1787-91
- 3.2. Dispersion parameters for indices of agricultural production 1840-1958
- 3.3. Import-export balance 1905-1918
- 3.4. Expenses of cultivation per hectare of corn: Lot 1908
- 3.5. Consumption of fertiliser: Haute-Vienne 1929
- 3.6. Changing farm structure 1892-1976
- 3.7. a. Agricultural variables 1892-1970  
b. Agricultural variables 1892-1970: mean values and coefficients of variation
- 3.8. Significance levels for agricultural subdivisions 1892 (u-values)
- 3.9. " " " " " " 1929 "
- 3.10. " " " " " " 1955
- 3.11. " " " " " " 1970
- 3.12. Labour requirements for agricultural areas
- 3.13. Mean rural migration rates: agricultural areas 1892
- 3.14. Significance of differences in migration rates from agricultural areas 1892
- 3.15. Mean rural migration rates: agricultural areas 1929
- 3.16. Significance of differences in migration rates from agricultural areas 1929
- 3.17. Mean rural migration rates: agricultural areas 1955
- 3.18. Significance of differences in migration rates from agricultural areas 1955

Table Numbers in the text (cont.)

- 3.19. Mean rural migration rates: agricultural areas 1970
- 3.20. Significance of differences in migration rates from agricultural areas 1970
- 3.21. Agricultural labour requirements: hypothesized and actual 1892-1970
  
- 4.1. Variables used in the migration context analysis
- 4.2. Correlations between net migration and demographic variables
- 4.3. Percentage of departments exhibiting net in-migration, by categories of population size 1891-1968
- 4.4. Correlation between net migration and employment sectors
- 4.5. Correlations between migration and unemployment, and women employed
- 4.6. Agricultural improvements and innovations
- 4.7. Percentage difference 1892 land clearance
- 4.8. Percentage difference: Natural growth and decline
- 4.9. a. 1891 and 1931 correlations between net migration and socio-economic variables  
b. Correlations 1954 and 1968 between net migration and socio-economic variables
- 4.10. a. 1891 Socio-economic characteristics for areas of net in-migration and net out-migration (mean values)  
b. 1929 Socio-economic characteristics for areas of net in-migration and net out-migration (mean values)  
c. 1955 Socio-economic characteristics for areas of net in-migration and net out-migration (mean values)  
d. 1970 Socio-economic characteristics for areas of net in-migration and net out-migration (mean values)
- 4.11. Multiple regression of factors affecting net migration 1891-1970
  
- 5.1. Percentage of communes (by category of population size in 1891) showing population decline
- 5.2. Growth of the four largest communes in Isère 1891-1975
- 5.3. Isère: natural growth of population: rates per 1000
- 5.4. Isère: migration rates 1891-1975
- 5.5. Margin of error 1968 census

Table Numbers in the text (cont.)

- 6.1. Characteristics of areas of out-migration: variables used in A.I.D.
- 6.2. Correlation matrix: characteristics of areas of out-migration Isère 1962-68
- 6.3. Decomposition of Group 1 (all) into Group 2 and Group 3 by Variable 02 in Step 1 A.I.D.
  
- 7.1. Active employed population by economic activity: Isère and Grenoble
- 7.2. Variables used in A.I.D. analysis of in-migration to Grenoble quartiers
  
- 8.1. Sample survey: Place of birth, place of residence 1962
- 8.2. Socio-professional status of heads of households 1968
- 8.3. Characteristics of heads of households: sample survey Grenoble 1968
- 8.4. Sample survey: countries of birth
- 8.5. Characteristics of the foreign-born population
- 8.6. Test for significant difference in the number of Algerian females compared to all females born abroad
- 8.7. Socio-professional characteristics of foreign-born population, classified by countries of origin
- 8.8. Characteristics of migrants born abroad 1962-68
- 8.9. Countries of origin of migrants born abroad 1962-68
- 8.10. Departments of origin sending the largest numbers of migrants to Grenoble
- 8.11. Characteristics of migrants from the rest of France
- 8.12. Migrants from the rest of France, classified by size of commune of birth
- 8.13. Socio-professional and age characteristics of migrants from the rest of France classified by size of commune of birth and area of origin
- 8.14. Departments of origin 1962-68 of migrants to Grenoble
- 8.15. Characteristics of migrants from the rest of France 1962-68
- 8.16. Characteristics of migrants born in Isere
- 8.17. Communes of Isère sending migrants to Grenoble
- 8.18. Migrants to Grenoble from Isère grouped by area of origin
- 8.19. Migrants to Grenoble from Isère 1962-68 grouped by area of origin
- 8.20. Characteristics of non-migrants (born in Grenoble)

## Maps

All maps are drawn using the direction  $\begin{array}{c} \text{N} \\ \uparrow \\ \text{†} \end{array}$  .

Whole page maps of France are drawn to the scale approx. 1 cm = 60 km.

Half page maps of France are drawn to the scale approx. 1 cm = 100 km.

Maps of Isère are drawn at a scale of approx. 1 cm = 8 km.

Fold-out key maps are included at the end of this thesis.

Maps of Grenoble are drawn at a scale of approx 3 cm = 1 km.

Maps of France in 1891 do not include data for Alsace - Lorraine which was at this time part of Germany.

## CHAPTER I. Introduction

- 1.0 General introduction
- 1.1 Migration concepts
- 1.2 Relevant Migration Research: a summary
- 1.3 Research on Migration in France
- 1.4 Introduction to the data sources
- 1.5 The study area
- 1.6 The aims of this thesis

## 1.0. GENERAL INTRODUCTION

There have been profound changes in the distribution of the population of France in the nineteenth century involving the unprecedented growth of urban areas and the consequent depopulation of the surrounding rural countryside. Nevertheless the evidence of research now shows that the extent of mobility more recently experienced may not be in such sharp contrast to a relatively stark pre-industrial period as was previously thought. Work by Williams (1963), Tugault (1972), Dickinson (1958) and Le Roy Ladurie (1966) shows that in Britain as well as France, there was a considerable amount of genuine residential mobility before the 1840's when the Industrial Revolution and improvements in public transport stimulated more general mobility. Having said this, obviously the scale and character of migrations before and after the 1840's varied considerably, and the factors which probably distinguished the two periods to a greater degree than any others are the greater diversity of migration origins and destinations, and the greater distances travelled in the industrial and post-industrial era.

The nineteenth century was dominated by rural to urban movement, which had an international extension in emigration to the New World. The migratory patterns of the twentieth century were profoundly disturbed by the two World Wars, but nevertheless saw an increasing urban to urban movement. After 1945, and more particularly since the 1960's, an

urban-rural flow has become evident, together with increasing international immigration of North Africans and others. In France rural to urban migration is still a major movement but to this has been added metropolitan decentralisation and out-migration from declining industrial areas.

The aim of this thesis is to focus on some of the more neglected geographical aspects of residential mobility in France since 1891, and specifically to concentrate on the nature of rural-urban migration in one department (Isère) in more recent years (1962-1968). Attention is paid first to the patterns of migration and the structure of migration flows, and second and most importantly to the physical and social environmental context of the movement. Attempts to understand systematically the nature of both the origin and destination areas of migrants have been dominated by other aspects of migration study. This is, however, a topic to which a traditional geographic approach can usefully be applied, not only to provide a more complete picture of the migration processes, but also to help in understanding the reasons for and the consequences of population movement.

Finally, the characteristics of a sample of rural-urban migrants in Grenoble are examined and related to the characteristics of the areas from which they came and in which they now find themselves. The large amount of data involved in a study of this type has necessitated fairly extensive use of statistical techniques, to introduce some order into the mass of information.

### 1.1. MIGRATION CONCEPTS

The literature on migration is both extensive and fragmentary. A large number of studies have been carried out covering a wide range of different aspects of migration, and guided by the interests and inclinations of the many disciplines involved. Willis (1974, p.7) has commented on this variation in approach:

'the most striking feature of all migration studies is their diversity, not only in terms of scale, coverage and data collection, but also in terms of the use of data and aims and methods of research.'

His view is reinforced by Welch (1970), Jansen (1968), Jackson (1969), Lee (1966) and others. Roseman (1971) attributes the variation in migration studies to different disciplinary viewpoints, to the traditional distinctions between migrations at different scales, and to the varied and fragmentary nature of the available data.

This wealth of research on migration dictates that any introduction to a further study in the field is selective. Thus it has been necessary to confine the introduction to this study to three aspects which are given particular attention. First, the concepts and definitions of migration are discussed because they form necessary background information for any study in the field. Secondly, the substantive findings of previous spatial studies of migration are reviewed, and thirdly, the context of the present research is introduced by considering migration in France generally, the data sources used in this study and the nature of the areas on which the research focuses. Finally in the light of this background material the detailed

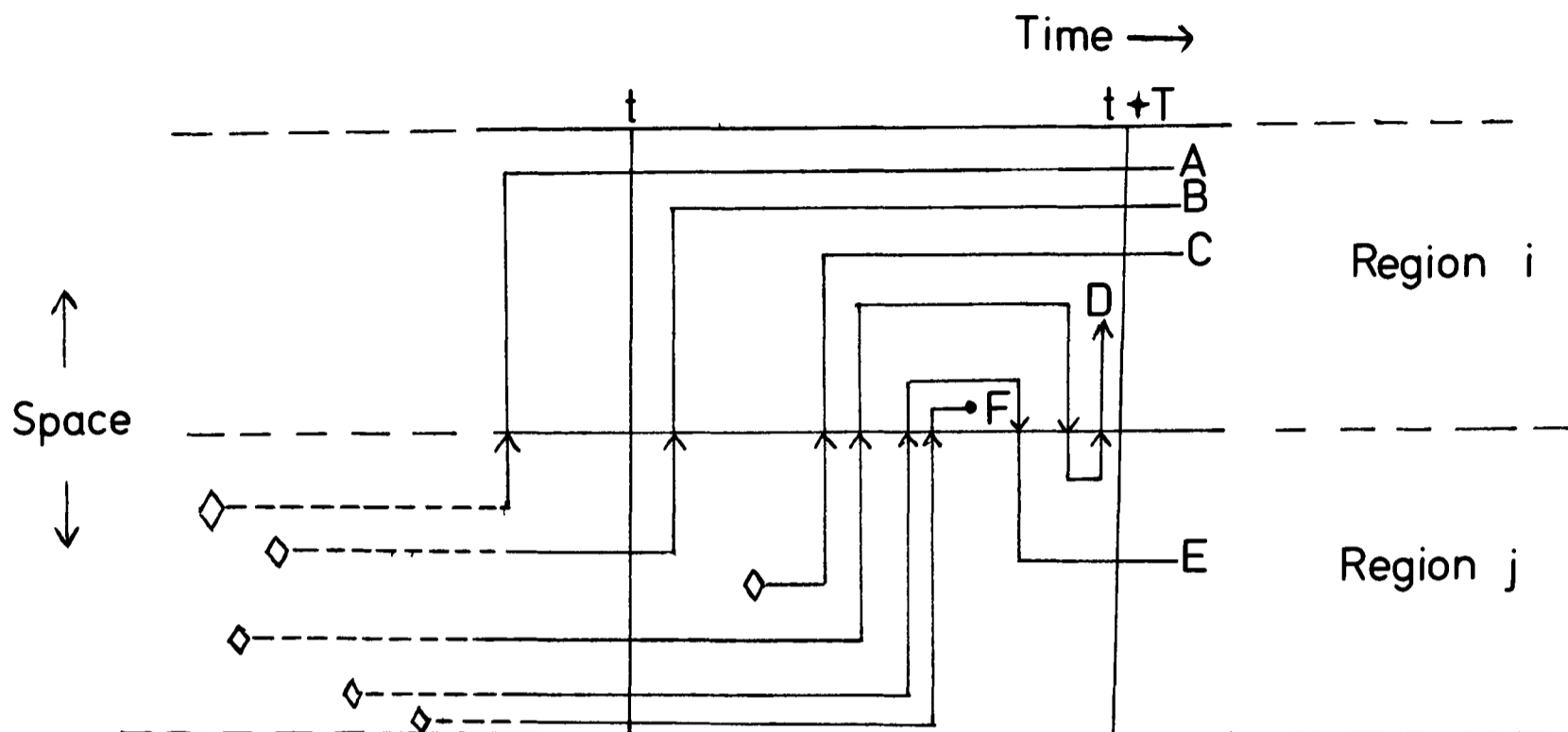
aims of the thesis are discussed.

Perhaps the distinction which it is most important to clarify initially is that between migration and migrant. Courgeau (1973) remarks that this distinction is of some considerable importance since one migrant may make several migrations. It therefore seems best to consider separately the people who move, and the migrations which they make. The distinction is also held to be very important in the spatial demographic accounting of Wilson and Rees (1974), as shown by Fig. 1.1.

In addition it has proved necessary to distinguish migration from what is probably best considered as mobility, although this label has not always been used. Cavalli-Sforza (1962) defines this distinction as being between diffusional movements which involve a change of residence, and circulatory movements which are non-permanent. Nevertheless such movements as journey to work which are best seen as examples of mobility rather than migration, or at least as circulatory movements, have been considered migratory by others. However, changes of residence should be considered as being of a different order since they have enormous implications for the distribution of labour and resources, and the social and economic evolution of different areas.

Sometimes, usually as a result of the way in which data is presented, migration is defined in terms of distance travelled or a minimum length of stay. In this way any move across an administrative boundary, or any move since birth

Fig. 1.1. Migrant-Lifelines (after Wilson and Rees (1974))



— A lifeline

◇ Birth

• Death

↑ Migration across a border

t beginning of the period

t+T end of period

T length of the period

- A, B & C Lifetime migrants in place of residence by place of birth census tables
- B a surviving migrant within period of concern from  $t$  to  $T+t$
- C a surviving infant migrant (born within the period)
- D a surviving migrant but 2 migrations
- E moves in then moves out within the same period (not recorded as a migrant)
- F non-surviving migrant

or in the previous twelve-month period may be considered as a migration. The result of such a system of definition is that the true extent of migration is underestimated.

In most instances migration studies are concerned with a restricted group of travellers who have undergone a permanent change of residence. Those moving within a country but crossing internal administrative boundaries are said to be internal migrants; those moving between countries are defined as international migrants. An international migrant e.g. an African moving to the Midi on subsequent moves within France would be classified as an internal migrant.

'Immigrant' and 'Emigrant' are terms usually applied to international migrants; 'in-migrants' and 'out-migrants' the usual nomenclature for internal movers in a particular area. 'Gross' outmigration and gross immigration refer to the total number of migrants out of and into a particular area, while 'net' migration is the balance between gross outmigration and gross immigration.

This thesis is concerned with permanent change of residence and particularly with internal movements. Occasional reference is made to international migrations for comparative purposes.

## 1.2. RELEVANT MIGRATION RESEARCH: A SUMMARY

There are three main areas of migration research which impinge on the current study. These comprise studies of the spatial pattern of migration, analyses of the origins and destinations of migrants, and the work which has been done on the characteristics of migrants and their reasons for moving. Evidence from studies in each of these fields will be reviewed to set the current research in perspective.

### 1.2a. Spatial patterns of migration

A theory of migration was first formulated by Ravenstein (1881, 1889). His work remains the starting point for most migration studies today. Generally, however, theory has proved secondary to empirical studies. As far as geographical studies of migration are concerned Ravenstein's work holds a central position. Three of his seven laws of migration concern the spatial pattern of migration, while two are concerned with the type of people who move, one with motive and a final one with the relationship between migration and its context. The laws related to spatial patterns were firstly that most migrations tend to be short distance rather than long; secondly that migration occurs by stages and finally that each migration stream has a corresponding counter-stream.

The first proposition namely that migration occurs over shorter rather than longer distances, has attracted by far the greatest academic attention. Justification for the observation was later provided by Zipf (1949) in his work on

'The Principle of Least Effort', and also by Stewart (1948) and Stouffer (1940). Laws of spatial interaction were formulated, known collectively as 'gravity' and 'potential' models. The general form of a model of this type is as follows:

$$M_{ij} = \frac{P_i P_j}{D_{ij}^b}$$

where  $M_{ij}$  = the no. of migrants between centre i and j  
 $P_i P_j$  = population of areas i and j, respectively  
 $D_{ij}$  = distance between centre i and centre j

It can be seen that as such the model makes some estimate of the likely migration (or indeed interaction of any kind) between two places on the basis of the population size of the two areas and the distance between them. It was originally postulated by Zipf and Stewart that distance operated in such a way that migration would be proportional to the product of the populations of the two areas and inversely proportional to the distance between them.

A further refinement of this basic model was made by Stouffer (1940) who suggested that there was no real reason to expect any simple direct relationship between migration and distance. He suggested that the number of persons going a given distance is proportional to the number of intervening opportunities. Anderson (1955) claimed that Stouffer's hypothesis had been supported by empirical evidence but in fact the operationalization of the intervening variable proved difficult. In relation to migration studies it is

clear that using the number of in-migrants is questionable as this variable is not independent and could lead to circularity in the logic.

A substantial amount of work has also been done in refining the parameters of the gravity model and particularly in calculating the precise nature of the friction of distance. In this respect the work of the Swedish school of demographers comprising Hagerstrand (1957, 1962, 1968) Olsson (1965a, 1965b), Claeson (1968), Porter (1956) and Lövgren (1956) is paramount.

Olsson observed that the gravity model can be restated as a linear regression equation with, in the case of the migration example, distance as the independent variable and migration as the dependent variable. In this form

$$\log y = \log a - b \log D$$

$b$  becomes the statement of the friction of distance. As Hagerstrand observed low  $b$  values in the equation indicate a gentle gradient characteristic of twentieth-century migrations spread over great distances; whereas high  $b$  values indicate a steep gradient and short distances typical of the nineteenth century situation. This characteristic increase in migration distances over time is also true in the French situation (Courgeau, 1970).

The most common distance transformation is the Pareto or double-log transformation. While this model provides a good general fit it does seriously overestimate the extent of short distance movement. Consequently a great deal of

attention has been directed towards improving the model of the relationship between distance and migration by using other transformations. Researchers who have made a major contribution in this field include Morrill (1963), Morrill and Pitts (1967), **Kulldorf** (1955), Somermeijer (1961), Taylor (1971) and Haynes (1974). Among the transformations employed are the lognormal, exponential and gamma. Obviously there is no universal best fit solution although Morrill and Pitts do suggest that the optimum transformation might result from a combination of the exponential and Pareto models which would combine elements of both purposive and accidental behaviour.

An example of the application of a range of different models to data on in-migrants to the Rhône-Alpes serves to illustrate some of the problems encountered in fitting the different transformations. It is clear that it is insufficient to take account of the general fit of the model alone (indicated by the correlation coefficient) since the pattern of the residuals from the regression of migration and distance is also an important guide to the suitability of the model as Table 1.1 shows. In this example a runs test is employed to check whether the residuals are randomly distributed or whether the model seriously overestimates or underestimates the influence of distance at any particular stage. It is evident from the result that all the first four transformations produce a similar result with random residuals but a slightly variable level of overall fit.

Table 1.1. Distance Decay Transformations

Trans-formation	Corre-lation coefficient(r)	Runs Test	Result	Comment
1. Exponen-tial	-.879	+++--+-----+-----+++	Random	Distance untransformed
2. $\sqrt{\text{Exponen-tial}}$	-.888	+++--+-----+-----+++	Random	Square root of distance
3. Log-normal	-.900	-+--+-----+-----+++	Random	Log-distance squared
4. Pareto	-.915	-+--+-----+-----+++	Random	Log-distance
5. Normal	-.282	+++--+-----+-----+++	Non-random	Distance squared and therefore considerably enlarged producing a very low r value

Although studies of the influence of distance have tended to dominate recent spatial analyses of migration flows, more complex multivariate methods have also been applied. In this respect mention needs to be made of the application of principal components analysis to migration flows. Early analyses of this type were carried out by Stewart and Warntz (1958) and more recently by Garrison and Marble (1968), Goddard (1970), Willis (1970), Hadjifotiou (1972), Winchester S.W.C. (1975) and Winchester H.P.M. (1977). The rationale of this approach is to impose some sort of order on the complex pattern of movements by defining subsystems of highly interconnected flows. As this approach is applied in this thesis further attention will be given to this type of study later.

Consistent with the development of the scientific

method purely descriptive studies of aggregate spatial data have been followed by predictive studies. Of the studies employing probabilistic principles those using markov chains predominate and among this group one can number work by Rogers (1966), Kelly and Weiss (1969), Hirst (1976) and Bell (1976) on Uganda, and Compton (1969) on Hungary. Two major limitations of the application of markov models to migration studies have been noted by Tanner and Gurley (1965a). Firstly the stationarity assumption which assumes that migration rates are constant over time, may not be consistent with reality; and secondly the assumption that migration rates prior to the observed time period have no effect is hardly a justifiable assumption with regard to residential migration. For these reasons and because of inadequacies in the data sources it is arguable that the application of stochastic process models to migration data may be considered more appropriate to the goal of statistical refinement rather than an understanding of the present French migration situation.

#### 1.2b. Origins and Destinations

Aside from the migration flows themselves attention has also been focussed on the destinations and origins of the migration streams although not to the extent one might have expected. One general concern has been with the rural/urban nature of source and destination areas. The traditional assumption about migration, namely that it

occurred in response to the demographic transition, modernisation of society and above all urbanization resulted in the designation of nearly all migration as rural to urban. Such was the assumption of Ravenstein and for many countries almost until the Second World War this was the predominant direction of movement.

However, as Zelinsky's (1971) model of the relationship between the demographic and mobility transition suggests the nature of origins and destinations have changed along with changes in migration patterns over time (see Table 1.2). Zelinsky's advanced society depicts not only a much higher level of residential mobility in later stages, but also increasing urban to urban movement and an even greater amount of circulatory movement. Such is the case in most European countries today, for as Fielding (1975) points out an advanced society actually exhibits movement away from larger urban centres (metropolitan decentralization), and away from areas of heavy industry where the need for labour is declining and the environment appears unattractive.

All this means that the traditional rural-urban movement of people in pursuit of improved employment opportunity and housing conditions which has been encapsulated as the push-pull explanation of migration, has been somewhat overtaken by the events of time. Nevertheless the power of economic growth as an explanatory

factor in population redistribution and the importance of rural-urban movements at least until after the Second World War is clear from the evidence. In France over the course of the last hundred years this type of movement converted the population from being 70% rural to only 30% rural. Also this kind of explanation may still be applied to international labour migration from rural areas of poorer countries to the urban areas of richer ones. In the European context the migration of Southern Italians, Yugoslavs and Turks to France and Germany is an example of this type of movement.

The characteristics of origin and destination areas have been taken into account in models of the extended Lowry type, which include information other than distance in order to more fully explain migration. A particularly good example of this type of work is that of Schwind (1971) in the U.S.A.

However, there are pitfalls in this approach. Firstly it is easy to allow the distance factor to predominate over the more general social and economic factors, which can be misleading as distance is, of course, only a surrogate measure for the cost and difficulty of travel. Secondly in determining generalities about environmentally-induced migration it is tempting to oversimplify a complex situation, by the use of the elegant and simple push-pull hypothesis, and in so doing to ignore the variety of human situations involved.

TABLE 1.2 - The Vital Transition and the Mobility Transition  
(after Zelinsky 1971)

<u>THE VITAL TRANSITION</u>	<u>THE MOBILITY TRANSITION</u>
<p>PHASE A - The Premodern Traditional Society</p> <p>(1) A moderately high to quite high fertility pattern that tends to fluctuate only slightly.</p> <p>(2) Mortality at nearly the same level as fertility on the average, but fluctuating much more from year to year</p> <p>(3) Little, if any, long-range natural increase or decrease</p> <p>PHASE B - The Early Transitional Society</p> <p>(1) Slight, but significant, rise in fertility, which then remains fairly constant at a high level</p> <p>(2) Rapid decline in mortality</p> <p>(3) A relatively rapid rate of natural increase, and thus a major growth in size of population</p> <p>PHASE C - The late Transitional Society</p> <p>(1) A major decline in fertility, initially rather slight and slow, later quite rapid, until another slowdown occurs as fertility approaches mortality level</p>	<p>PHASE I - The Premodern Traditional Society</p> <p>(1) Little genuine residential migration and only such limited circulation as is sanctioned by customary practice in land utilization, social visits, commerce, warfare, or religious observance</p> <p>PHASE II - The Early Transitional Society</p> <p>(1) Massive movement from country to cities, old and new</p> <p>(2) Significant movement of rural folk to frontiers, if land suitable for pioneering is available within country.</p> <p>(3) Major outflows of emigrants to available and attractive foreign destinations</p> <p>(4) Under certain circumstances, a small but significant, immigration of skilled workers technicians, and professionals from more advanced parts of the world</p> <p>(5) Significant growth in various kinds of circulation</p> <p>PHASE III - The late Transitional Society</p> <p>(1) Slackening, but still major, movement from countryside to city</p> <p>(2) Lessening flow of migrants to colonization frontiers</p>

Table 1.2 (continued)

THE VITAL TRANSITION

- (2) A continuing, but slackening, decline in mortality
- (3) A significant, but decelerating, natural increase, at rates well below those observed during Phase B

## PHASE D - The Advanced Society

- (1) The decline in fertility has terminated, and a socially controlled fertility oscillates rather unpredictably at low to moderate levels
- (2) Mortality is stabilized at levels near or slightly below fertility with little year-to-year variability
- (3) There is either a slight to moderate rate of natural increase or none at all

## PHASE E - A Future Super-advanced Society

- (1) No plausible predictions of fertility behaviour are available, but it is likely that births will be more carefully controlled by individuals - and perhaps by new sociopolitical means

THE MOBILITY TRANSITION

- (3) Emigration on the decline or may have ceased altogether
- (4) Further increases in circulation, with growth in structural complexity

## PHASE IV - The Advanced Society

- (1) Residential mobility has levelled off and oscillates at a high level
- (2) Movement from countryside to city continues but is further reduced in absolute relative terms
- (3) Vigorous movements of migrants from country to city and within individual urban agglomerations
- (4) If a settlement frontier has persisted, it is now stagnant or actually retreating
- (5) Significant net immigration of unskilled and semiskilled workers from relatively underdeveloped lands
- (6) There may be a significant international migration or circulation of skilled and professional persons, but direction and volume of flow depend on specific conditions
- (7) Vigorous accelerating circulation, particularly the economic and pleasure-orientated and other varieties as well

## PHASE V - A Future Super-advanced Society

- (1) There may be a decline in level of residential migration and a deceleration in some forms of circulation as better communication and delivery systems are instituted

Table 1.2 (continued)

THE VITAL TRANSITION

(2) A stable mortality pattern slightly below present levels seems likely, unless organic diseases are controlled and lifespan is greatly extended

THE MOBILITY TRANSITION

(2) Nearly all residential migration may be of the inter-urban and intraurban variety

(3) Some further immigration of relatively unskilled labor from less developed areas is possible

(4) Further acceleration in some current forms of circulation and perhaps the inception of new forms

(5) Strict political control of internal as well as international movements may be imposed

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The study of origins and destinations in this thesis has been deemed necessary to provide as rounded a picture as possible of internal migration in twentieth-century France, and more especially within Isère. In this study it is clear that migration has been inextricably linked with the changing occupational structure of France, and in particular, the shift from agricultural to secondary and tertiary occupations. The geographical migration and social mobility of the French population has not always been synchronised (Muet 1970); and thus the relationship between migration and agricultural change has provided one of the themes for this thesis, drawing together the study of migration per se, and of the context in which it occurs (Willis 1974).

Destination areas within France as a whole have been predominantly urban, until recent years. The general changing pattern of destinations within France is evaluated. However, migrants move to particular areas within the major towns and cities. Indeed the study of migration destinations has particularly concentrated on the location of migrants within cities; and the reception and assimilation of minority racial groups, notably in North America. In a study of Paris in 1911, Ogden and Winchester (1975) found a distinctive sectoral pattern of provincial migrants. There is some evidence to suggest that migrants seek out an area of socio-economic status comparable to their own, because of price constraints on

housing, and ease of social interaction with residents. This in itself is unsurprising; it may be important in its effects on both the origin area and the reception area. In the case of the rural-urban migrant the most able may leave the rural environment for a relatively poor urban area, where they may take up unskilled jobs and live in expensive but mean accommodation: in such cases both the origin and destination areas may suffer in socio-economic terms. Internal migration within cities is the prime means whereby social change occurs in small areas. It is for this reason that the destination areas within the rapidly growing city of Grenoble are examined in detail (see Chapter 7).

### 1.2c. Migrants and Motivations

The people who move and their characteristics, such as age, sex and occupational status, have also been the subject of continuing research. This propensity of people with particular characteristics to migrate more than others is described by the term 'migration differentials'. Indeed two of Ravenstein's early laws of migration relate to the characteristics of migrants. He suggested that two types of people have a higher propensity to migrate than the average population; females who predominate among migrants making short journeys, and rural populations who are more migratory than townsmen.

These two ideas have attracted attention subsequently.

On the one hand recent work on the sex differential suggests that this must be considered a culturally defined variable, which varies with individual situations, and the availability of alternative employment. In many cases of rural to urban migration the first and predominant movement has been of females, escaping from the hardship of child-bearing, domestic drudgery and farm work: eventually leaving behind a residual population of ageing celibate males (Philipponneau 1959, Kayser 1954, Veyret-Verner 1949). In other cases, particularly in pioneer movements, males have predominated and women have joined the movement only when communities had been established.

On the other hand the feature of a greater propensity to migrate among rural populations coincides with the concept of the mobility transition. However, there is no doubt that migration is selective but the characteristics of migrants vary according to the location and type of migration. Lee (1966) in his extension of the Laws of Ravenstein suggested that the degree of positive selection may vary with the difficulty of the intervening obstacles, and so the high degree of male selection in pioneer movements from e.g. Pennsylvania to California may be seen to confirm this hypothesis.

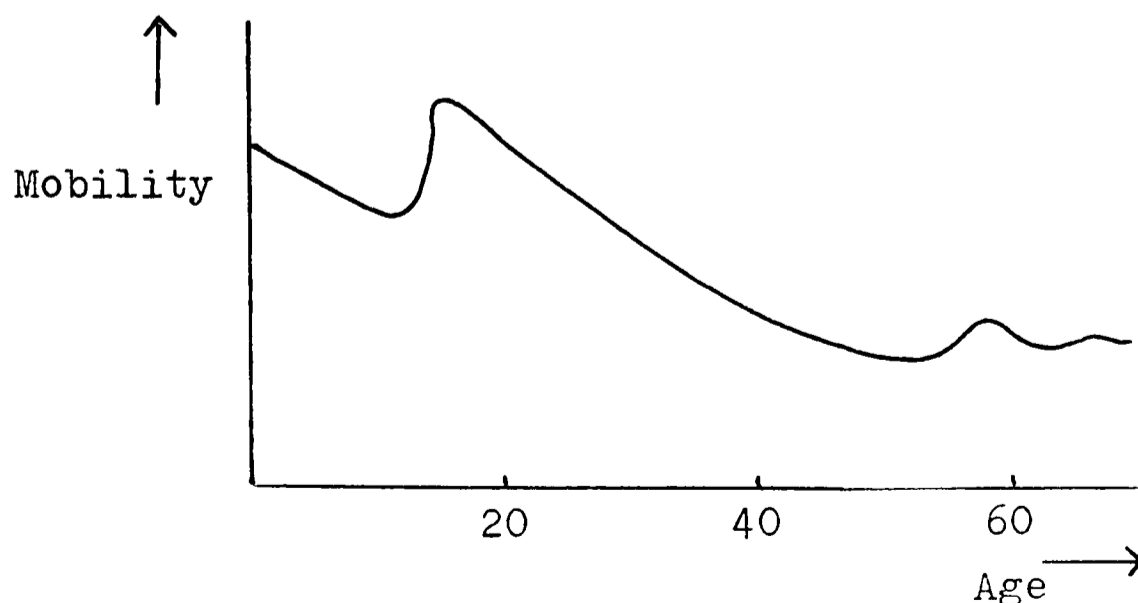
One very clear feature emerging from the literature is the close relationship between migration propensity and stage in the life cycle. Indeed Thomas (quoted in Jansen 1968)

considers that the only consistent differential is age, and that people in their late teens, twenties and early thirties are the most migratory of all population sub-groups, while Pittenger (1974) considers the age-group 20-24 particularly likely to migrate. This relationship may hold for many reasons - as young people leave the parental home perhaps to work, to marry, as students or soldiers; it is the time when new families are being formed and **are** growing; it is also the time when people feel most able to branch out and be adventurous before 'settling down'. For this reason also very young children show a high propensity to migrate although, of course, these migrations are in no sense voluntary. The migration/age relationship is shown diagrammatically in Fig. 1.2. Rossi (1955) considered that most mobility occurred as a result of families adjusting their housing needs to changing family size as the life cycle progresses. This, of course, assumes that housing of a suitable type is available and depends on the person's perception of his housing needs.

Changes during a life cycle may involve not only changes in residence but in the location and type of occupation. However, the change in residence does not necessarily imply a change in job location, or vice versa. Indeed the increased distance between home and work has been considered as one of the most significant geographic changes of recent years. There is evidence to suggest

that, in general, migrants have higher occupational status and social aspirations than non-migrants (Musgrove 1963, Rose 1968), as these groups have access to the widest information available about alternative jobs and locations. Long (1974) found that black migrants in the Northern cities of the U.S.A. are less dependent on welfare, more successful in obtaining employment, and less criminal in their behaviour than black non-migrants: a situation attributable to motivation. In France, Garnier and Hazelrigg (1972) found that migrant farmers' sons combine upward social and occupational mobility with geographic mobility. Thus within these relatively poor economic sectors it is those who have the most motivation who move.

Fig. 1.2 The migration-age relationship (used in the simulation model of Cordey-Hayes and Gleave (1973)).

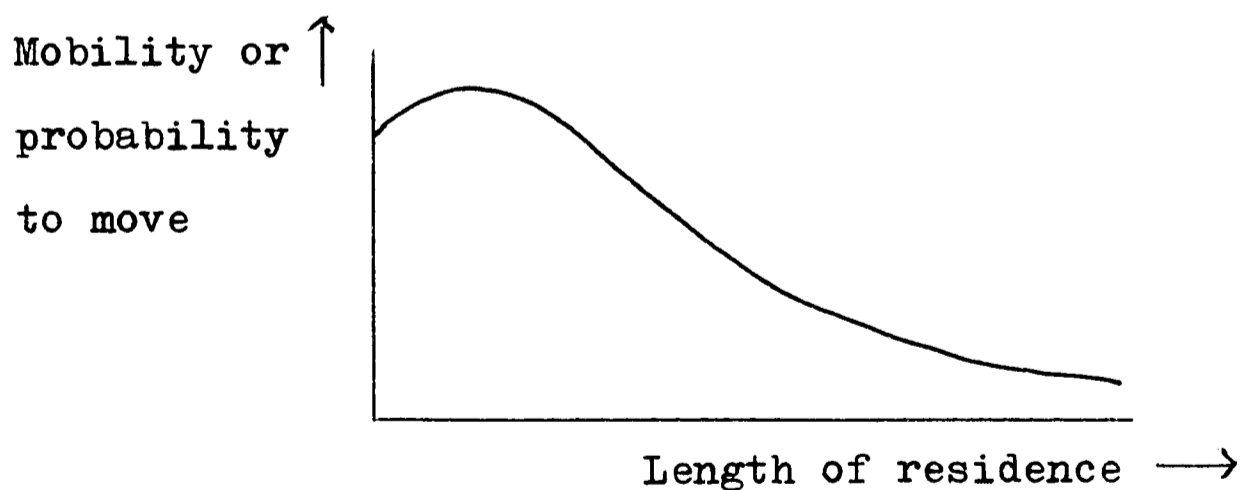


One might expect migration to be related to the length of residence in any one place but the present evidence is equivocal. Rider and Badger (1943) concluded that:

'the probability of moving within a specified time ..... decreases as the length of maintaining the same residence increases.'

This is shown diagrammatically in Fig. 1.3. This viewpoint implies that mobility is not independent of previous moves, and indeed this has proved to be a major difficulty in the use of stochastic models. However, some more recent studies have indicated that propensities to migrate may be independent of the length of previous residence (Courgeau 1973, Silcock 1954). For a more complete discussion of the effects of length of residence on mobility see Morrison 1967, Myers, McGinnis and Masnick 1967 and Plessis-Fraissard 1975.

Fig.1.3. Probability of migration and length of residence (after Herbert 1964)



Although the characteristics of people who migrate have some general features in terms of age, sex and occupational status, Bogue (1969) suggests that it is

pointless to attempt to construct a general theory of migration selectivity. Indeed, given the wide variety of migration environments and motivations for migration, it is difficult to construct a set of migration differentials applicable in all circumstances.

Implicit in this discussion of migration differentials, distances travelled, and origins and destinations, has been the motivations for movement. Motivation is the most difficult aspect of migration to measure even by direct survey analysis, as retrospective discussion and subsequent events may cloud the recall of motives as they were at the time of movement, or they may even have been forgotten. Furthermore motives are often very complex, and migrants may consider numerous factors simultaneously. In most studies the assessment of motivation is by implication and by study of actual movements: thus if people move to a big city with more social amenities and better jobs, it is a reasonable assumption that this (in some measure) is the motive for movement. Of course, the motives will vary with the individual, but random elements will not affect the general overall pattern.

The basic tenet of migration motives has been economic theory. Bogue (1969), Lowry (1966), Jansen (1968) Shryock (1964) and many others indicate that movement is for economic reasons from high unemployment areas to more favourable areas, bringing into the reasoning the concept

of economic equilibrium or cumulative causation. This is the implicit motivation behind the push-pull concept, which has been further developed by Baggs (1973). However Harris (1966) has shown that employment and wages usually form a minority of the reasons given by migrants for moving. Sjaastad (1962) extended the economic theories to a wider cost benefit theory to include other factors such as direct costs and opportunities.

The social theories implicated by Sjaastad have been more directly considered by Rossi (1955), Musgrove (1964), Donnison (1961), Hawley (1950) and Cullingworth (1968). These in essence relate movements to household structure and changes in the life cycle: furthermore they relate geographical and social mobility.

Some combination of social and economic motives is offered by Leslie and Richardson (1961), Rose (1968) and Ross (1962). Social class is considered to be important in explaining values, attitudes and thus the reasons for movement. A distinction may be drawn between longer distance movements characteristic of non-manual economically motivated workers; and shorter distance moves common among manual workers, and for housing reasons.

Simmie (1969) summarises the situation thus:

'geographical mobility is the result of the interaction between the independent social structural variables of age and household structure with specific social classes; and

a set of intervening variables represented by a family's values and aspirations which lead it to seek net gains in the balance of satisfaction derived from housing, employment, location and social intercourse.'

Much attention has been focussed in recent years on the mechanics of the individual location decision, admirably summed up by Wolpert (1965) in his concept of place utility and search behaviour.

However, as a rider to the discussion of motivation it should be noted that of those who move, not all are necessarily enthusiastic to migrate: a feature which results in Taylor (1967) dividing migrants in West Durham into four types:

- (1) Resultant movers - who would not have moved but for the threat of redundancy,
- (2) Aspiring movers - dissatisfied with present conditions,
- (3) Dislocated movers- people who had loose ties with the area, e.g. from being in the Forces,
- (4) Epiphenomenal movers - who left for varied and unique personal reasons.

Thus movers in categories (1) and (2) could both be classified as 'economically' motivated, yet their attitudes to migration may well determine their subsequent migration behaviour. Motives can be either positive or negative possibly depending on whether the migration is influenced by conditions either at the origin or the destination. Lee (1966) considers that this difference in response has considerable effects on the type of migrant

selected, in that migrants responding to plus factors at their destination are positively selected, while negatively- motivated migrants may not be selected at all.

Migration motivation is an essential part of migration study, and cannot be divorced from any other aspect of migration - whether migration differentials, origins and destinations, or spatial aspects of migration fields. The subject of economic and social motivations is implicit in all migration study, and these general guidelines are borne in mind throughout this thesis.

'The importance of the migration component in the population geography of France may be illustrated by a single statistical comparison: while the total population increased by only 0.6 per cent in the 1954-1962 intercensus period, 7.1 per cent of the 1954 population had made an inter-regional migration and 10.7 per cent had changed department of residence by 1962'.

(McDonald 1969, p.101).

### 1.3. RESEARCH ON MIGRATION IN FRANCE

Research on migration in France has a long and distinctive tradition as it derives from both historical demography and from regional human geographical studies. This tradition has been continued and extended by the I.N.E.D. whose studies, published in the 'Cahiers' and in the journal 'Population' have been particularly concerned with the French demographic situation.

General demographic texts include those by Sauvy (1966), Pressat (1969) and Chevalier (1951, 1964) on historical demography; Reinhard, Armengaud and Dupâquier (1968), Guillaume and Pousson (1970), also contain much of relevance (reprinted) in Glass and Eversley (1972). The general texts of geographers particularly George (1951) and Beaujeu-Garnier (1906-1958) also deserve mention in this context.

The distinctive evolution of the population structure of France with its very early demographic transition has been summarised by H. Chevalier (1946), Bourgeois-Pichat (reprinted 1972), Ariès (1949) and Armengaud (1967, 1971).

Long term consistencies in demographic characteristics such as the age at marriage, and the proportion of marriages, were recognised by Chasteland and Pressat (1962). Concern with falling population levels, and the consequent loss of European power and prestige, provided an early focus for polemical rather than academic works e.g. Bertillon (1891) and Spengler (1938).

Appreciation of the role of population in the changing structure of French society owes much to the early studies of French rural life, particularly those by Marc Bloch (1931) and Dion (1934). The literature on agricultural change is reviewed in Chapter 3, but of wider relevance is the work of Mendras and others at the C.N.R.S. (1953-1979): and of Pautard (1965) on regional disparities in agricultural development. More recent work by Weber (1976) and Dyer (1978) re-emphasises the importance of population change in societal development in France in the last hundred years.

Studies of migration in France are extremely numerous, ranging from the vast national overview (Sorre 1955, Pitié 1971, Martin 1971) to the description of migration in small areas (e.g. Bêteille on the Charente, 1972; Michel in Brittany, 1977, Pitié on Vienne, 1971). Regional studies form a large part of the French tradition, some of the more important being those of Le Roy Ladurie (1966), Gautier and Henry (1958) and Chevalier (1950

and 1958). However the studies vary widely in their methods, sources and orientation. In this review of the French migration literature, therefore, it has been necessary to be selective. The topic is considered under the same headings as those used for the general literature review of migration research.

### 1.3a. Spatial patterns of French migration

Spatial patterns of French migration have been described by various authors at different scales. At the national scale, there is a growing body of literature concerned with the in-migration of foreigners to France (Rager 1950, Faidutti-Rudolph 1962, Lannes 1953 and Tapinas 1968). This has developed rapidly since the influx of Maghribian workers in 1962, and reflects the importance of the foreign-born population both in terms of their demographic impact, because of their age-structure and fertility rates, and as a 'replacement' labour force (Beteille 1972, Peach 1968). McDonald (1969), Dickinson (1963), Herin (1971), Nadot (1971) have summarised not only the numbers and destinations of foreigners, but also emphasised the social problems of assimilation and housing in the larger urban areas to which they are attracted. More recently, other foreign national groups have received attention, particularly the Portugese.

However the primary concern of this thesis is with

internal rather than international migration. Several major studies, (e.g. Beltramone, 1966; Pitié 1971; Martin 1971) are concerned with the national extent of internal migration, and provide a full summary particularly of net gains and losses over time. The accompanying sequence of maps shows areas of net immigration at selected dates from 1891 to 1975. (Fig.1.4)

The results contain some interesting features. Pre-1914 the push-pull rural-urban thesis looks clear-cut: there were very limited areas of attraction, principally those departments containing large cities, the Northern industrial areas, and the Mediterranean coast. The majority of the rest of France - the rural and mountainous areas - suffered from a massive depopulation. In 1931 the areas of depopulation have been reduced as the exodus slowed, but in 1946 the pattern is disrupted by movements of both military and civilian populations in the immediate post-war months, and shows striking evidence of outmigration from the areas under occupation.

In the 1960's and 1970's there is evidence to show that the rural-urban movement has changed its character: there is a marked trend away from the declining industrial areas, and also from the central cities (a movement partly concealed at this scale), suggesting a shift in the balance of push and pull factors over time. However,

Fig 1.4 France : Areas of positive net migration.

a. 1891



b. 1911



Fig 1.4 (cont.)

c. 1931



d. 1946

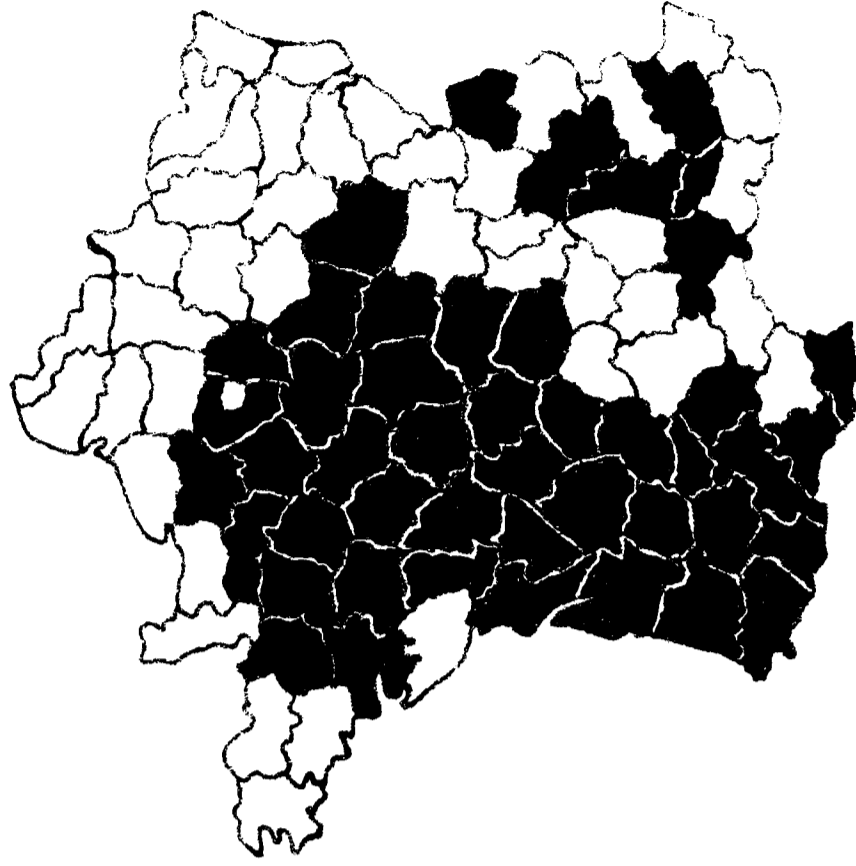


Fig 1.4 (cont.)

e. 1962 - 68



f. 1968 - 75



even in the 1960's and 1970's there is evidence of a continuing attraction to the Paris region (gross and net), and of movement between contiguous regions (J.W.House 1978).

A study of the distances travelled by migrants has been made by Courgeau (1970). His 'interaction' approach assesses the effect of distance on internal migration fields by means of circular zones from the department of origin, and furthermore assesses the changing impact of distance over time. As an example of this, the b values of the regression equation for migration and distance at selected dates over the period 1911-1968 for migration into the Rhône-Alpes are shown below:

Table 1.3. Distance Decay Exponents: Migration to the Rhône-Alpes (Pareto transformation)

Date	B-values
1911	3.180
1946	2.382
1962	1.794
1968	1.517

This data provides supplementary evidence to show that in France the friction of distance has lessened over time, and people have migrated further as transport and information flow has improved.<sup>1</sup>

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<sup>1</sup>A different picture for employees in 1962-1968 is shown by House 1978 (Fig.27)

### 1.3b. Origins and destinations of French migrations

Obviously the spatial flows of migration should not be divorced from the origins and destinations, which were shown in general terms in the preceding maps (Fig.1.4). Many writers have emphasised the spatial imbalances in France's economic development and have seen in this disparity the push and pull factors stimulating migration. Chatelain's (1960) study of income levels, Paré's (1974) analysis of the availability of information, and Pailhé's (1972) assessment of employment structure all pinpoint the basic dichotomy between the agricultural South and West, and the richer more advanced North and East. Fielding (1965), McDonald (1969) and Muet (1970) have emphasised that the regional disparities in availability of employment have necessitated occupational as well as geographical mobility.

The rural depopulation of France has been thoroughly described and analysed. Merlin (1971) forms a typology of departments classified by the date and severity of the rural exodus. However, these studies have, besides describing and classifying movements, also assessed the impact of migration, particularly on the origin areas. Clout (1975) and Paillat (1976) have analysed the demographic effects of migration on the residual population: the ageing of the rural population is of particular concern where they are combined with poor social facilities and limited accessibility.

A group of studies based largely on the work of Sutter has demonstrated the widening of contact fields and the breakdown of rural isolation, which has occurred over time as transport improves and population density declines. The extension of the 'isolat' or 'neighbourhood' over time has been measured, e.g. by Morel (1972) in Picardy and Ogden in Ardèche (1975). The wider effects of rural depopulation are also seen in the concern for administrative reorganisation of depopulated communes (Bastide & Girard, 1974).

The destinations of migrants have been predominantly urban, with a special concentration in Paris. Tugault (1974) has stressed that in France urban growth has continued despite only slow total population growth. However, not all urban areas are of equal attraction. Pumain, Robic and Pinchemel (1972) have classified towns according to their capacity for attracting migrants: they have identified declining towns, relay centres, attractive towns, and absorbant towns - those which are growing exceptionally fast. There is some correlation between the attraction of the town and the size of the urban area: but this has changed over time, with the largest towns losing their attraction in recent years.

The effect of substantial migrations to the cities has been profound. Vincienne (1972) states:

'... cette mobilité complexe des agriculteurs, contribue là où ils sont nombreux et particulièrement dans les petites cités, à donner une forme singulière à la ville.'

However, the effects of migrants on their urban destinations has been most thoroughly studied within

larger cities e.g. Chatelain on migration to Paris, Lyon and Marseille in 1891 (1971). Chevalier (1950) has emphasised the importance of unsettled migrants in explaining spatial patterns of social deviance such as crime around the Porte St. Denis and prostitution around Les Halles; while Chombart de Lauwe (1952) incorporates the study of the effects of migration in his extensive social geography and Ogden and Winchester (1975) have described the sectoral spatial patterns of provincial migrants in Paris.

'Les contraintes de l'emploi et de la carrière professionnelle, expliquent une grande part de la mobilité de la population. Mais la constitution d'une ménage et la croissance des enfants entraînent aussi de nombreux changements de domicile'.

(Bastide and Girard 1974)

### 1.3c. French migrants and motivations

The rural-urban movement implies 'push' and 'pull' factors which are well-known. The push factors may be generally stated as the poor facilities of rural areas, the low economic returns from agriculture and the grinding drudgery of farm work. Zeldin (1973) maintains that because agriculture had been protected from outside competition, it had therefore failed to modernise, and as a consequence the waves of rural-urban migration of 1861-5, 1875-81, 1896-1901 and 1936-8 were essentially 'migrations of poverty'. This poverty was increased by the non-competitiveness of rural industry and artisans

in the face of factory production in the towns. Pitié (1971), Pourcher (1964) and the I.N.E.D. have conducted extensive questionnaire surveys which support this hypothesis although, of course, they relate chiefly to the 1960's and 1970's. Few parents were prepared to recommend to their children that they should stay on the land, and instead advised that they should seek alternative employment and a life-style offering more comfort, more money, more security and a release from the caprices of the weather.

However, if the poverty and the overpopulation of the rural areas provides the primary push, the means of emigration was provided by various stimuli; the widening net of primary education in a common language, the new horizons opened up by military service, and perhaps most importantly of all, the spread of provincial railways. Also, at least in part, the permanent rural exodus was foreshadowed by seasonal movements of men seeking winter employment as pedlars or masons.

The 'pull' factors may be seen as the attractions of less arduous and better paid employment, the distractions of the 'bright lights' and, of course, marriage prospects. The table below lists the motives suggested by those questioned in the I.N.E.D. study of 1961 and in Paris by Pourcher (1964). Obviously the 'mix' of push-pull factors varied over time, and this study suggests that in the most recent years of the

1960's and 1970's a search for a better 'quality of life' has become of comparatively greater importance rather than the 'purely' economic factors.

Table 1.4. Reasons for moving 1964

Motive	France		Paris sample
	Men	Women	
Work	59%	41%	50%
Family	21%	42%	32%
(of which 'to marry')	(14)	(30)	(22)
To Retire	8%	4%	6%
Others	24%	23%	23%
Total*	112	110	111

\*Totals exceed 100 because of multiple replies.

In almost all cases work is, however, the primary cause of migration, and this motivation is seen in the changing occupational structure of the French labour force, with almost half employed in the tertiary sector in the 1970's. Many people seeking advancement have been forced to move to the towns, particularly to Paris where one finds the head offices of companies and administrative posts not available elsewhere. However, this kind of employment is undertaken by a minority of 'high-fliers': the majority of rural migrants who have moved to Paris, particularly in the early years of the twentieth century, have taken jobs of much lower status. Indeed it is the case that the rural underprivileged,

including the non-farm rural population, whose industrial viability was being undermined by competition from factory industries, moved to Paris and other large towns to become the new urban poor. Others moved to Paris for family reasons, not always because of marriage, but also due to illness or bereavement.

In Pourcher's study of the 1960's, in about 75% of cases the move was considered successful; many reported the enjoyment of liberty and independence; but a minority felt disorientated by the urban mentality and by sheer size, and felt lonely away from a familiar home community.

The presence of friends or relations often helped the newcomer to settle in, and reinforced the spatial patterns of provincial minorities in Paris. There was rarely a total break with the home town, with frequent visits: and as the years passed and wealth accumulated, many migrants returned to a 'second home' in the country for weekends and holidays, or for retirement. However, this has totally changed the complexion of the rural areas; a holiday or retirement community lacks the vitality of a village with its roots and work in the soil.

The migrants themselves are generally young, in the home-formation stage, and as indicated are of varying socio-economic status. The higher occupational groups

are found to be the most mobile, but the farmworkers have also been exceptionally mobile, leaving the countryside and their jobs at the same time. However, a majority of migrants reaching Paris had lived in towns before their final move to the capital, indicating a progressive 'stepwise' move from the countryside. (See Kayser and Vidailbet 1960, Dugrand 1953).

The study of migrants and their motivations is undoubtedly one of the most complex and sensitive areas of migration study. In this thesis the spatial patterns of migrants will be examined; and the ways in which the environmental context of migration movements has changed over time, both at a national scale, and within Isère. Motivations per se are not an object of direct study in this thesis, but nonetheless they are constantly borne in mind and alluded to when studying the origins and destinations of migrants.

#### 1.4. INTRODUCTION TO THE DATA SOURCES

'Although results of French censuses may on the whole be considered correct, they should not be taken as perfect. In older censuses systematic errors were made in the population of certain departments, such as Corsica, and certain towns, such as Marseilles.'

(Pinchemel, 1969 p.109).

The wealth of population statistics available in France was one of the major factors in the development of French historical demography. Vital registration dates back to the fifteenth century (Henry 1965), while modern population censuses began in 1801<sup>1</sup>. The seven censuses<sup>2</sup> until 1850 provide absolute population numbers by sex and marital status, together with births and deaths. From 1851 the census information is more comprehensive and more reliable, providing age data, and the details necessary for calculations of fertility rates (G~~z~~oubert 1965), while migration data becomes available from 1891.

The population censuses provide structural information which varies in coverage over the period. The population censuses are not, however, the only data source utilised, but are supplemented by the agricultural censuses and by other complementary sources.

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<sup>1</sup>Before the nineteenth century 'censuses' consisted of population lists for specific towns e.g. Aix-en-Provence and Grenoble; and for the seventeenth century there exists a general census called for by the Duc de Beauvillier in 1697 (see Goubert 1965).

<sup>2</sup>Censuses for 1801, 1806, 1821, 1831, 1836, 1841, and 1846.

#### 1.4a. Census data

A broad set of structural variables for four cross-sections in time is drawn from the censuses from 1891 onwards. The composition of these sets of data vary slightly over the period, but consistently cover essential aspects of the migration environment: employment structure, demography, housing, education and health. While the censuses of 1891 and 1911 provide a substantial amount of information on migration and housing, the inter-war censuses are more limited in their coverage. The paucity of information in the 1920's and 1930's is ascribed by Chatelain (1971) to the time-lag in the development and application of calculating machines.

The census of 1946 provides a turning-point in the scale and details of the available statistics. It was the first census organised under the auspices of the INSEE-Institut National de la Statistique et des Etudes Economiques<sup>1</sup>, which improved the operation of the statistical services by the establishment of eighteen regional offices with 'modern statistical machines' (Census 1946: Introduction). This permitted the results to be more detailed and aided quick production. In the post-war years a wide range of social, economic and

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<sup>1</sup>The INSEE was created in 1946, and developed from the Service National des Statistiques which had been formed in 1941.

demographic data becomes available at a sub-departmental level. Prior to 1946 population totals only had been available for each commune. The amount of data available for each commune reached its peak in 1962, but has subsequently been reduced because of mounting costs.

Within large communes - such as Grenoble - the data is available for smaller areas. Towns are divided into 'quartiers', which are themselves subdivided into 'îlots'. These correspond roughly to wards and enumeration districts (now small areas) in Britain, although the 'îlot' may be more directly compared to the American 'block'. This breakdown only becomes generally available from 1962, although some specific data is available in 1954<sup>1</sup>.

Thus, in the post-war years, more detail becomes available particularly on housing and education. The larger scale data is utilised in the study of Isère, and the intra-urban breakdown is used to study the environment of migrants within the city of Grenoble.

The migration data available from the population censuses is limited in scale and detail. Each census year provides estimates of net migration (gain or loss in population not attributable to natural population movements, shown in the preceding sequence of maps for

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<sup>1</sup>In comparison enumeration district data in Britain was widely available in 1961, and for selected areas was published for 'tracts' in 1951.

selected years, Fig.1.4). This provides a picture of overall change but does not show the movements of migrants: it is clear that in 1931 Paris was still gaining population but the exact origin of those migrants is not recorded.

Gross migration data is provided in 1891, 1901, 1911 and 1946 by cross-tabulations of place of residence with place of birth, on a departmental scale. From 1962 onwards the migration data changes form. It is derived from a specific question in the census of the form 'Where were you living on 1 January 1962?' (the date of the previous census). The data therefore becomes a cross-tabulation of present residence with previous residence.

The change in the type of data has as a consequence a reduction in the number of migrants recorded. Both types of data record 'resultant migrations' between two specified dates, but the time-period between the two dates varies. 'Resultant' migrations are so-called because any intervening moves are not recorded, and return moves not distinguished, thus underestimating migrations. Migrations of an essentially temporary nature may be included, such as movements by students or soldiers. However, children born to migratory mothers in the intervening period are deemed to have moved also.

The difference in the place of birth/residence data and the previous residence/present residence data occur; from an average lifespan of 30-40 years to the 6 or 8 years

between censuses. From 1891 to 1946 the proportion of inter-departmental migrants had increased steadily from 16.8% of the population to 28.5% as a result of the changing age-structure of the population and war movements. With the change in data type the numbers of inter-departmental migrants fell to about 13%. The fall in numbers does not, however, appear to cause any fundamental change in either distance or direction of migrants (Courgeau 1970), and thus the change in data type is probably of lesser importance than the gaps in the data of the inter-war years. This gross migration data may be used to analyse the spatial patterns of migration at a national level. It is not, however, available at a scale smaller than the department, for 1962, but a detailed breakdown by age, socio-economic group, and sex is contained in Tables M501 and M502 for 1968, which may be consulted in INSEE offices.

#### 1.4b. Individual census returns

The lack of small area migration statistics (other than net migration) is a major drawback in the detailed study of migration. Sources other than the published census returns were therefore evaluated in order to study migration within Isère.

These sources include continuous registration of vital statistics, listes nominatives, and electoral rolls (Estienne 1963). All these data sources involve

extensive cross-checking of data (Johnston 1969) and are only suitable for the study of small areas. There are further pitfalls in the use of this data, such as incompleteness and drawbacks in the lack of supplementary information. Other sources include specially undertaken questionnaire surveys such as those conducted by Pourcher and Bastide in the 1960's. However, the time and resources required for a survey of this type is beyond the scope of the individual researcher, and so none of the above-mentioned sources were utilised in this thesis.

The I.N.S.E.E. in 1968 had collected a large amount of migration data which had remained unprocessed because of lack of resources. By special permission of the Archivist of Isère and the Regional Director of the I.N.S.E.E. in Lyon I was able, under stringent conditions,<sup>1</sup> to obtain a sample of migrants to the city of Grenoble, which would otherwise have been impossible on that scale. The sample did not cover all quartiers of Grenoble as some of the individual census returns had already been destroyed. It was not possible to examine the census returns for 1975 as these were still being processed.

This data is of particular use in that it shows two stages of migration, place of birth, residence in

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<sup>1</sup>No names could be taken, or details of housing conditions and family structure (as, for example, cohabitation could have been revealed). To safeguard individual privacy, only data at an aggregate scale could be presented.

1962 and residence in 1968. Furthermore some supplementary information about the migrants was available, particularly socio-economic (socio-professional) status which could be related to the environment of their origin and destination.

#### 1.4c. 'Causes of Death' Data

In order to provide as wide a background as possible to the patterns of internal migration, other sources besides the population censuses were consulted. Births, marriages and deaths had been recorded from the early nineteenth century, but it was the individual death bulletin introduced in 1907 which enabled the production of statistics relating the main causes of death to general statistics of age, sex and civil status. From 1887 statistics of causes of death are available for large towns; and for the whole country from 1906.

The reliability of statistics has improved with time. The older statistics have to be interpreted with caution because of the high proportion of deaths due to 'senility' or 'indeterminate' causes. Of most interest to this thesis are those diseases induced by the environment - such as bronchitis and tuberculosis; these diseases were easily identifiable even at the turn of the century, and the results are thought to be reasonably reliable. The influence of changes in

nomenclature are negligible, with the exception of the revised nomenclature of 1948 (INSEE 1963).

#### 1.4d. Agricultural Census Data

'Il est bien connu que les statistiques agricoles françaises sont d'une médiocrité telle que notre pays se place, dans ce domaine, très loin derrière les voisins d'Europe occidentale. La France en était encore, en 1954, à collecter des statistiques suivant une méthode élaborée en 1902, mais avec des résultats sans doute moins bons qu'à cette date.'

(J. Klatzmann, 1959).

The agricultural statistics available for France compare unfavourably to those of Britain. From 1891 onwards there exist only four major agricultural enquiries, for the years 1892, 1929, 1954-56 and 1970.

The censuses of 1892 and 1929 are two of the 'decennial' enquiries which began in 1835. The 1835 enquiry is imprecise in the date of enumeration, and suffers from inaccuracies arising from non-cooperation, inefficiency, and problems of measurement<sup>1</sup>. However, the format was utilised for the subsequent surveys which were formally established as decennial enquiries by the decree of 1.7.1852. The 1852 and particularly the 1862 and 1882<sup>2</sup> enquiries are useful for comparison with the later censuses which are utilised in this thesis.

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<sup>1</sup>As local terms were still in use for areas and linear measures.

<sup>2</sup>There was no enquiry in 1872 because of the disruption and financial strain caused by the Franco-Prussian War.

The major enquiries furnish information on crops, livestock and rural economy, providing an adequate basis for the study of agricultural conditions. It is unfortunate that there is such an extensive gap between 1892 and 1929, filled only with annual estimates of a limited range of data. In 1902 these estimates were reorganised on a farm unit basis rather than by the communal/cantonal commissioners. The immediate effects of the first world war are detailed by the Ministry of Agriculture in 1915, giving some indication of the reduction in agricultural production; but in general, this period of agricultural change is inadequately described by the statistics available.

The 1929 census is, however, extremely thorough, and is supplemented by departmental monographs which provide some fascinating insights into the daily life and working methods of the agricultural community<sup>1</sup>. Moreover, selected statistics are available at the commune levels, providing small-area information at a relatively early date.

There is, nonetheless, another substantial gap before the next census, carried out over the years 1955-56, bridged by annual statistics of limited reliability particularly in the war years. The gap is accounted for by the late publication of the 1929 census (published 1937), the Second World War, and subsequent lack of finance.

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<sup>1</sup>For example the writer of the Morbihan monograph complains of the Breton habit of fatalism 'il traitait sa misère ainsi qu'un maladie héréditaire et incurable', of their practice of direct manuring on growing crops; and of their vice of intemperance - particularly on market days.

The 1956 census was the first major census carried out farm-by-farm but suffered in quality from 'la méfiance innée des agriculteurs qui croient voir le fisc dernière toute statistique' (Katzmann), and from the mixed ability of the 20,000 enumerators employed. The results for part of the West of France are not published because of their inaccuracy, and it is known that fruit and vegetables, livestock and some other products are grossly underestimated.

The 1955 data is published at the scale of the department and agricultural region, but commune data is available from the Directions Départementales de l'Agriculture.

Despite the problems the post-war coverage is more complete than formerly. The 1955 census attempts a complex sampling procedure to provide information on a wide variety of topics. In 1963 a 10% survey was carried out<sup>1</sup> which is less detailed but of high quality; it is published only at the department scale because of rounding errors when there are only small numbers of observations.

The 1970 census is detailed in its coverage and scale. It is furthermore accompanied by an extremely valuable source, the 'Enquête Communale', which summarises the service provision and resources of each commune.

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<sup>1</sup>To provide essential information for the preparation of the Vth plan.

Despite the obvious changes in coverage and accuracy, Pautard (1965) considers there are some useful series of statistics which may be traced through the years, particularly land use, cereals, the number of farms (except this becomes imprecise when considering very small areas), methods of working, the labour force especially males, and data on some professional organisations such as cooperatives. It provides generalised information about the agricultural environments which may be related to outmigration.

#### 1.4e. Other sources

The other major agricultural source is the cadastre or land-use survey, which dates from the early nineteenth century. The ancien cadastre parcellaire does not give any sort of national coverage and the maps are not standardised in method or scale (Herbin and Pebereau 1953). In some cases registers of land holdings had been maintained until the twentieth century but the accompanying maps went unrevised. The value of the cadastre as a geographical source lies in its high standard of ground survey and recording; thus it is extremely suitable for detailed studies of limited areal extent. It is invaluable in the re-creation of complete land-use patterns at a particular date (see, for example, Clout (1968)), but there is no time-series information available, so it is not considered a suitable source for this thesis.

Further agricultural data is, however, drawn from the information held by the C.N.A.S.E.A. on the I.V.D.<sup>1</sup> policy, which provides recent supplementary information on agricultural change. Supplementary evidence is drawn from various sources where appropriate: for example information on housing in the 1890's is drawn from a survey published by the Ministry of Finance in 1891<sup>2</sup>, and on HLM housing in Grenoble from the planning offices of the Hôtel de Ville.

The four major sources, together with supplementary material, provide a very great amount of statistical information. It has been necessary to employ multi-variate statistical techniques to bring order into this quantity of data.

While it is relatively easy to list the main statistical data sources other material is derived from more disseminated origins, from geographical and a wider literature, from people, places and perceptions. Whenever possible, these sources and the techniques and programmes used in their analysis, are acknowledged in the text.

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<sup>1</sup>Indemnité Viagère de Départ

<sup>2</sup>Les résultats de l'évaluation des propriétés bâties.  
Paris - Imp.Nat.

### 1.5. THE STUDY AREA

France was selected as the study area because of its unusual population history: its exceptionally early decline in fertility, the declining population of the early twentieth century, together with the centralisation on Paris: and its substantial rural to urban migrations. This interest in the population history of France was stimulated by personal knowledge of France, and by the geographical traditions of the Oxford School of Geography with its interests in human and social geography in general, and of France in particular.

The first part of the thesis examines the spatial patterns and the environmental context of migration, at a national level. The scale of analysis used is that of the department. Data is widely available at this level both from the population and agricultural censuses. The departments were created by Napoleon to divide up the historic provinces of France, and to ensure that all parts of the country were firmly answerable to Paris. The departments are remarkable for their homogeneity in size and even in shape because they were conceived so that an official in his capital could travel by stage coach to any part of his domain and back between sunrise and sundown. Thus there is little problem about the size and shape affecting the value of the data (see Willis 1972).

However, despite the relative uniformity in size and

shape, the population sizes of the départements vary a great deal. As the accompanying sequence of bar graphs shows the maximum variation in population size occurred in 1954-62 when rural depopulation had drastically reduced the populations of départements such as Lozère, and before the Parisian départements had been divided in 1964.

The département is preferred to the région de programme<sup>1</sup> as the scale of analysis, because of the greater detail available. Migration data is produced at the regional scale for 1968 and 1975 but it is wasteful of time and information to aggregate data for previous years. The département therefore provides the optimum scale of analysis for a national study.

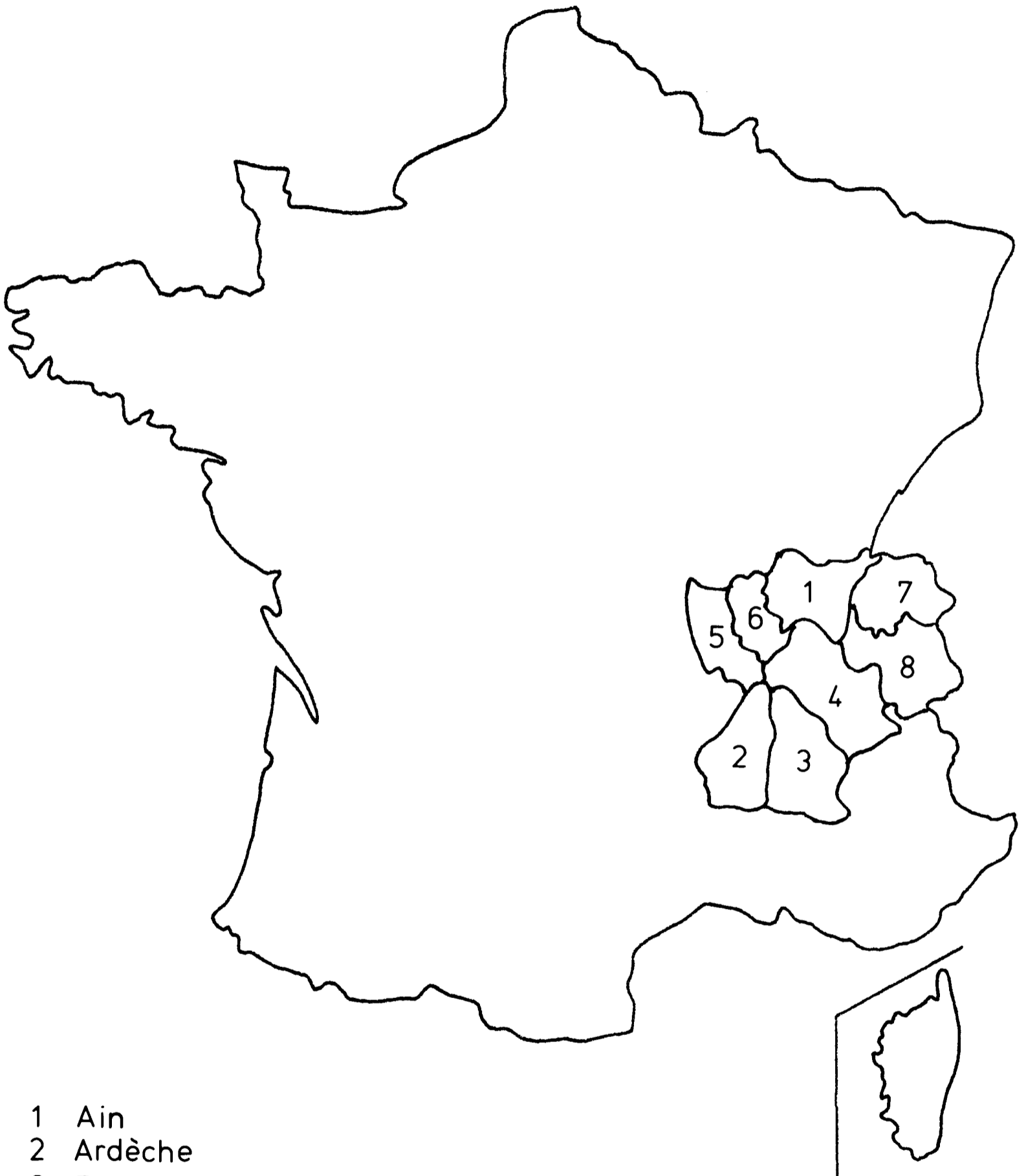
Corsica is excluded from this study because of the poverty of the census data. Although it is clear that the majority of sub-migrants from Corsica are attracted to the region of Provence, the island département has had a distinctive history, and the question of Corsican demography and migration deserves separate treatment.

Isère was selected as an area for further study, the reasons for which must be briefly mentioned here. In

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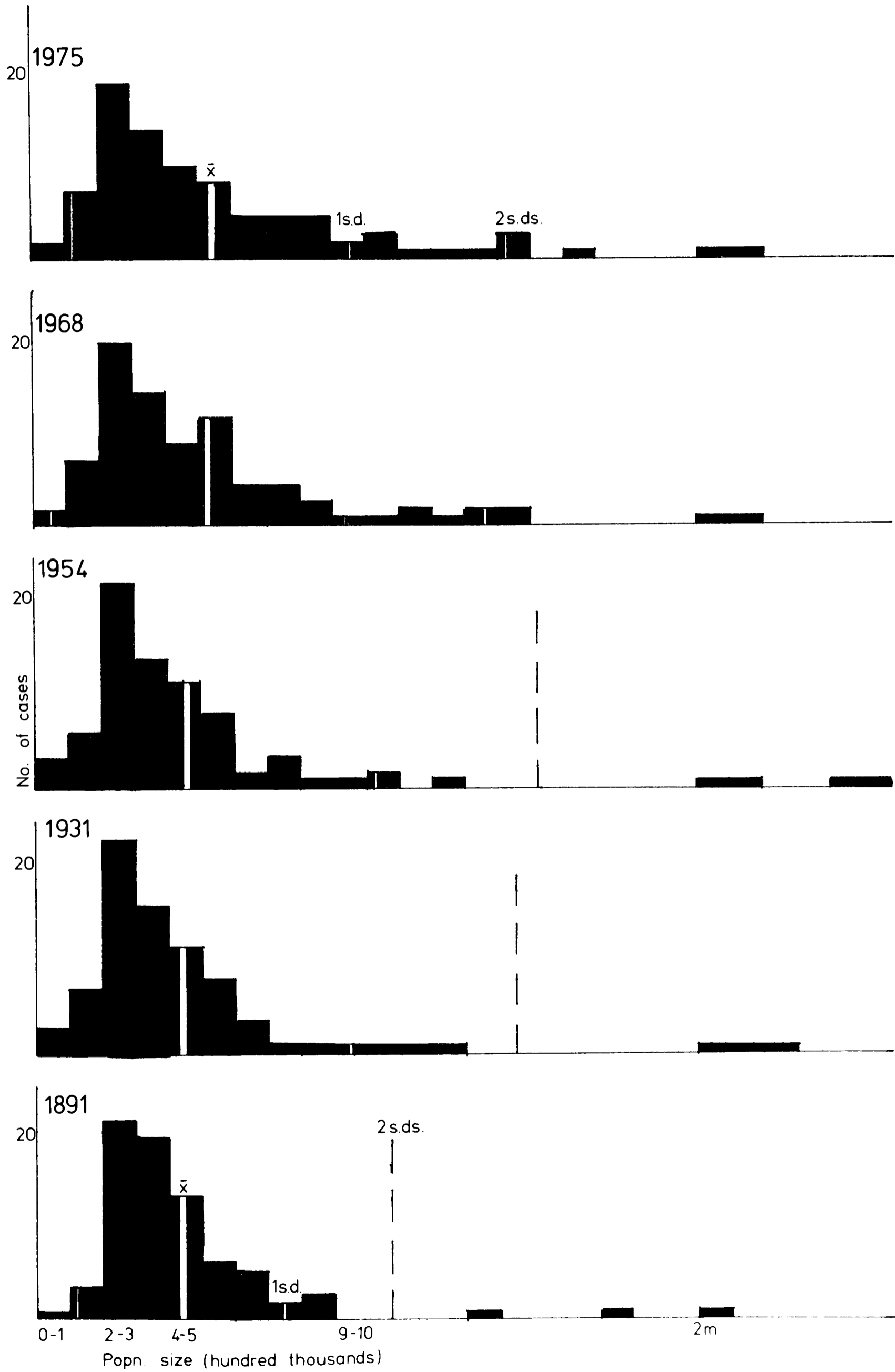
<sup>1</sup>The French regions consist of amalgamations of between 2 and 8 départements and were established from 1968 onwards.

Fig 1.5 The Rhône-Alpes region.



- 1 Ain
- 2 Ardèche
- 3 Drôme
- 4 Isère
- 5 Loire
- 6 Rhône
- 7 Savoie
- 8 Haute -Savoie

Fig. 1.6 Departments of France: Population sizes



general terms, it was felt necessary to choose an area representative of the whole of France. Primarily as a result of time available it was necessary to confine the in-depth analysis to one department only: this was because the optimum scale of analysis at the sub-department level is undoubtedly the commune, giving the maximum information for the smallest area. The department of Isère contains over 500 communes, while the entire Rhône-Alpes region contains almost 3,000 communes, a massive task for a single research worker.

The Rhône-Alpes region contains the eight departments of Ain, Ardèche, Drôme, Isère, Rhône, Loire, Savoie and Haute-Savoie (see Fig.1.5). It is the largest planning region in France and the second in terms of population size. It is a mountainous area, with the Alps and the Massif Central being separated by the Rhône corridor. Isère is considered representative of the Rhône-Alpes region, and to a lesser extent, of France itself. Isère is a large department containing within its boundaries areas of great diversity, forming a microcosm of the physical structure of the Rhône-Alpes. This parallel must not be pursued too closely, but with her Alpine areas, Pre-Alps, infertile lowlands, and fertile and populated river valleys Isère represents a wide variety of physical and agricultural conditions differentially related to migration (further described in Chapter 5).

French migration has, until very recent years, been predominantly rural to urban, and it was felt necessary to select a department containing both a wide variety of origin areas (as indicated above) and a major destination. Isère is one of several departments which fits this description. However, Isère is particularly suitable, as its capital, Grenoble, has in the post war years become one of the fastest growing cities in France and a focus for migration of national importance (see Ch. 2).

## 1.6. THE AIMS OF THIS THESIS

The foregoing review of the migration literature has been selective in its coverage. Indeed it has been the intention to introduce some of the major areas of geographical inquiry on migration and at the same time to cover those aspects of the topic on which this thesis will impinge.

The review has shown firstly that recent geographical studies have tended to concentrate on spatial analysis of migration flows and particularly on the influence of distance. This thesis will concentrate much less on distance and rather more on summarising and understanding the basic spatial patterns of migration and the changes in those patterns over time. This will be done at a national scale by examination of gross as well as net migration data, and at a local scale by using a sample of migrants drawn from individual census returns.

Secondly it is clear that previous research has paid more attention to migration flows than to the environmental context of migration, and where the context of migration has been considered it has been in terms of 'impact' studies, or in the general terms of the rural or urban nature of origins or destinations, or in the very specific context of the urban destination of international migrants. This thesis seeks to provide a broader perspective on the environmental context of migration in France and Isère, and particular weight is given to the role of agricultural structures and improvements as a factor in internal migration.

This perspective serves as both a guide to the explanation for the movement and enables answers to be given to general questions about the nature of areas which form the origins and destinations for rural-urban migrants.

Concern with the context of migration leads on to a further point about current emphasis in migration study. Although rural to urban migration constituted a major flow in the first half of the 20th century, in the second half a variety of other movements have developed: these, and especially inter-national migration, have become a fashionable focus for study because of the problems which result from such migrations. Nevertheless within France redistribution of population from rural to urban areas has been a continuing phenomenon, and this kind of migration can provide problems for source areas of no less importance than international migration provides for destination areas. Also the position of internal migrants within their city destinations provides a useful comparative base for assessing the position of international migrants.

Finally a very clear dichotomy has emerged from the review of previous work between studies using aggregate data and those using information at the individual level. It is the aim of this thesis to link these two scales of analysis by relating information about the migrants themselves obtained from the sample of migrants in one city, Grenoble, to the nature of the areas in which they now find

themselves and the natures of the areas from which they came.

In sum this thesis focuses on a relatively neglected but instructive aspect of migration - the migration environment of both origins and destinations. This emphasis, together with a more complete picture of the spatial pattern of flows by the use of gross flow data, provides a more complete and truly geographical analysis of migration, which it is hoped will inform our understanding about the causes and effects of migration in a rather more realistic and traditional way than some of the newer and more abstract geographical studies of migration have done. It is felt that in studying migration there is a great deal to be gained from going behind the bare statistical data about migratory movements to investigate the sorts of areas between which the moves were made.

Chapter 2 - Spatial patterns of French migration: gross flows

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- 2.0. Introduction and method of analysis
- 2.1. 1891: the pattern becoming established
- 2.2. 1891-1911: the changing order
- 2.3. 1946: the post-war situation
- 2.4. 1954-1962: the new patterns established
- 2.5. 1962-1968: regional analysis
- 2.6. Conclusions

## Chapter 2. Spatial patterns of French migration: gross flows

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### 2.0. INTRODUCTION AND METHOD OF ANALYSIS

Research on migration in France has concentrated particularly on the depopulation of rural areas and the consequent inequalities between regions of France (see Chapter 1.3). This inequality reaches its greatest extent between Paris and the rest of the 'désert français' (Gravier 1947), as Paris has provided the prime focus for migratory movements within the country. Another strand of migration research suggests that the friction of distance has, as in other countries, lessened over time. These two factors - the attraction to urban areas, particularly Paris - and the distance of the path travelled are borne in mind throughout this analysis.

The pattern of net migration balances from 1891 - 1975 has been shown in Fig.1.4. a to f. These show the areas which have gained or lost population by migration but cannot show the complexity of migration moves because only the balance between out-movements and in-movement is shown. Most migration studies have focussed on net rather than gross migration because of the complexities of the analysis of gross flows at a national level, and the difficulties of incorporating gross flows into, for example, an extended Lowry model of migration (Schwind 1966).

A study of gross flows pinpoints not merely net gains and losses in population, but the changing patterns of destinations and hinterlands over time. The matrices of gross flows are analysed by Principal Components Analyses at cross-sections in time between 1891 and 1968. The availability of data and the problems arising from its use are discussed in Chapter 1.4: it is sufficient to recall here that gross migration data is available only for 1891, 1901, 1911, 1946 and 1954-62, with a change in data type in 1946 from place of birth to place of previous residence. To maintain approximately comparable time-periods analysis of the 1901 data is omitted.

Principal Components Analysis (P.C.A.) is a well tried technique commonly used in the delimitation of urban social areas. Its application in migration studies has been more limited although there exist a growing number of investigations into intra-urban movements: these studies are most frequent in the American literature - notably the contributions of Wheeler (1970), Wheeler and Stutz (1973), Stutz (1973), whereas in England published work is by Bruton (1970) and unpublished by Winchester (1975).

Hadjifotiou (1974) has used P.C.A. in an analysis of migration between 100 SMLAs in England and Wales in relation to the housing and labour market of these cities.

The application of the technique in a national study of gross migration flows is a relatively new context to which the technique is well suited.

The great value of P.C.A. is its general capability of data-reduction by extracting 'bundles' of similar correlations or principal components. The Components reveal major subsystems of migration by correlating origins on the basis of their destinations.<sup>1</sup> The choice of a Principal Components as opposed to a factor solution avoids the estimation of communalities by assuming a value of unity. This assumes that all variation is included within the given data set, a more reasonable assumption in a relatively closed<sup>2</sup> migration system than in analysis of social variables forming part of a wider more open social system (Cattell 1952). Furthermore, interpretation of P.C.A. is much easier in migration studies because all variables and observations relate directly to areas. The solution used is P.C.A. with varimax rotation, in each case extracting up to 10 significant components.

---

<sup>1</sup>Destinations may also be correlated but correlation of destinations accounts for a lower total variance explained (55% and 75-80%). The lower explanation is accounted for by the greater similarities between departments sending to a few major destinations, than between departments of destination. The same phenomenon was found by Wheeler (1970).

<sup>2</sup>Intra-departmental migrants and non-movers are excluded from this analysis, as are immigrants from abroad, who do, however, appear in the gross flows after their first change of residence.

However, P.C.A. is not without its problems, graphically catalogued by Giggs and Mather (1975) and Openshaw and Gillard (1976). The objectivity of the analysis may be affected by a number of subjective decisions which even an 'objective' statistical technique still requires (Johnston 1973). The problems merit examination although this is not the place for a complete discussion. (For further information see Rummel (1970), Cattell (1952), Cattell and Baggaley (1960), Child (1970). The decisions to be taken include the use of raw or normalized data; the number of components to extract; the assessment of significant loadings and scores; and the choice of rotation.

The controversy over the use of raw or normalized data is still being aired (Short (1975), Evans, Catteral and Rhind (1975)). Short chooses to use a logarithmic transformation, despite the difficulties of interpretation which may be associated with logged variables (Black 1972). In this study the raw data was used throughout, because of these interpretation problems and because of the similarities in the distribution of the variables. The validity of the results is confirmed by reference to the original correlations.

The number of components extracted is determined by the percentage explanation achieved. The usual 'cut-off' points are components with eigenvalues greater than 1, or alternatively a scree test may be used to determine a break

point in eigenvalue size. In each case eigenvalues greater than 1 were interpreted; which in 1891 gave 8 interpretable components, 10 for 1911, 1946 and 1954-62, and 3 for the regional P.C.A. for 1962-68.

Significant loadings are identified using the Burt-Banks formula, which is based on correlation significance levels and the order of extraction of the component. Significant scores are those greater than 1 standard deviation from the mean, as the scores are standardised to zero mean and unit variance. The choice of Varimax Rotation is determined by the need for specific rather than general factors. It is the most commonly used rotation, although Hadjifotiou uses an oblique (oblimin) rotation, which may partly explain the difficulties of interpretation which result.

While the patterns of migration at cross-sections in time are of interest in their own right, a major aspect of significance is the change of these systems from one time period to another. Several methods of measuring component invariance have been proposed (Cattell and Baggaley 1960, Johnston 1973); these range from 'eyeballing', through computation of correlation coefficients and the use of chosen 'marker' variables for comparison, to the application of three dimensional factor analysis. This latter technique has, as yet, produced results of a rather unsatisfactory nature.

The technique used here is a derivation of the Marker Variable Similarity Index (see Short for an application of this technique), where the significant loadings are compared from one component to another over the intervening time-period. A component was considered to be invariant if at least half the significant loadings recurred in the corresponding component of the next time period, and if the scores or destinations were also comparable. Thus component 2 in 1891 has 13 significant loadings, 12 of which recur significantly in component 4 in 1911. The major destination of Bordeaux remains the same, although minor destinations differ slightly. There can be no doubt of the invariance of this component over time. This high degree of comparability is maintained until the post-war period when two instances of component fission and one of fusion occur.

## 2.1. 1891: THE PATTERN BECOMING ESTABLISHED

By 1891 the rural exodus had been under way for at least 30 years; the flows becoming well-established since the peak of rural population in about 1861. The P.C.A. extracts 10 significant components which together explain 78.5% of the variance. The first component alone accounts for over half the explained variance, and the others decline rapidly in explanatory power (Table 2.1).

Table 2.1: Variation explained by Components

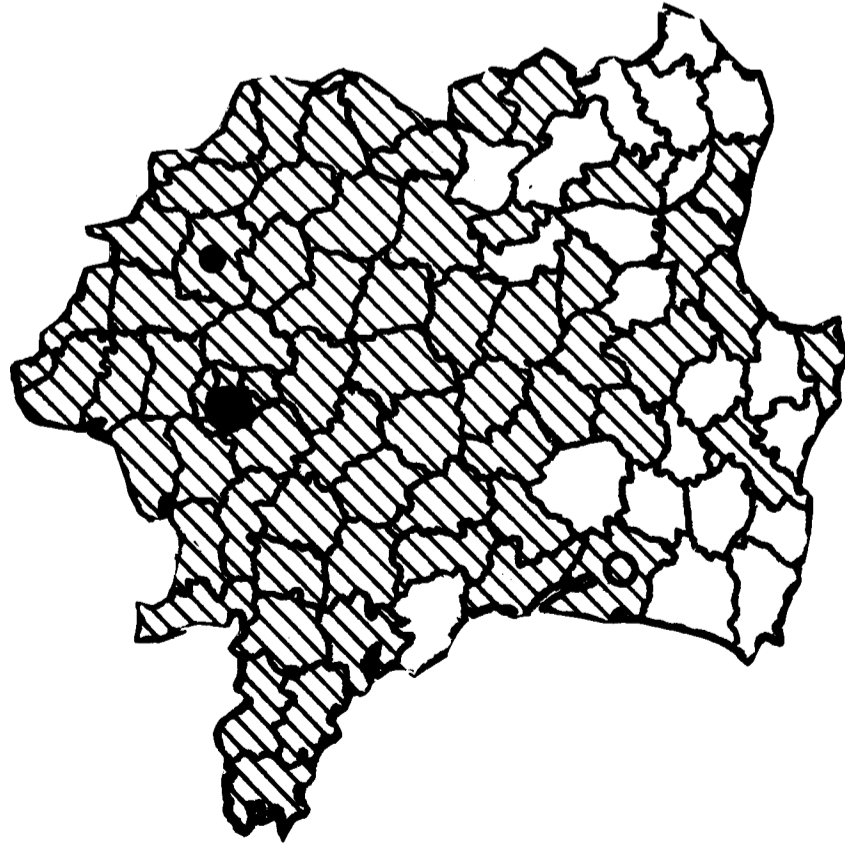
Component:	1891	1901	1911	1946	1954-62	1962-8*
1	40.1	33.1	30.9	41.0	28.2	34.1
2	8.3	7.5	7.8	7.8	7.3	13.7
3	7.1	7.0	7.2	6.9	7.1	11.1
4	6.1	6.9	7.1	6.2	5.5	9.3
5	5.0	5.5	6.1	5.9	5.1	7.2
6	3.6	4.7	4.8	3.7	5.1	7.1
7	2.5	4.7	3.7	2.5	4.0	5.8
8	2.4	2.8	3.2	2.1	3.8	3.5
9	2.0	2.4	3.1	2.0	3.6	2.4
10	1.5	1.8	3.0	1.9	3.1	1.6
Cumu- lative %	78.5	76.4	76.9	80.0	72.8	95.8

\*Analysis at regional level.

The first component (Fig.2.1) shows dramatically the importance of Paris in the migration system of France. The hinterland of the capital city extends over 65 of the 87

Fig 2.1 Component scores and loadings 1891

1.



▨ ORIGINS Significant loadings (Burt-Banks formula)

● MINOR DESTINATIONS Scores > 1 s.d. from mean

2.



● MAJOR DESTINATIONS Scores > 2 s.ds. from mean

○ - DESTINATIONS Negative scores

Fig. 2.1 (cont.) 1891

3.



4.



Fig. 2.1 (cont.)

5.



6.

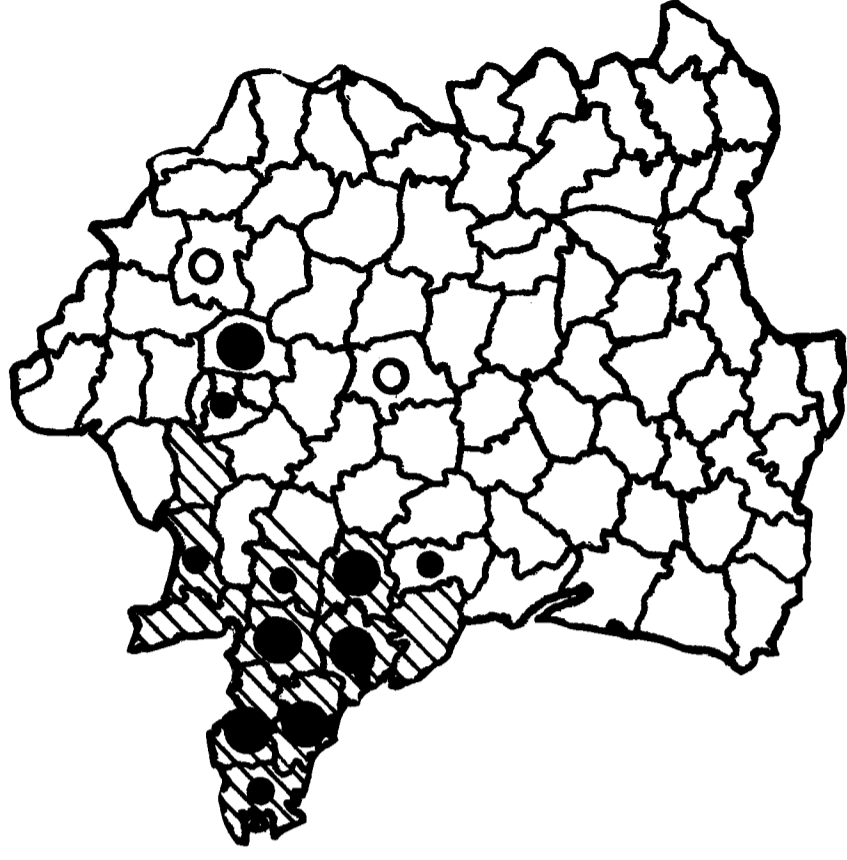
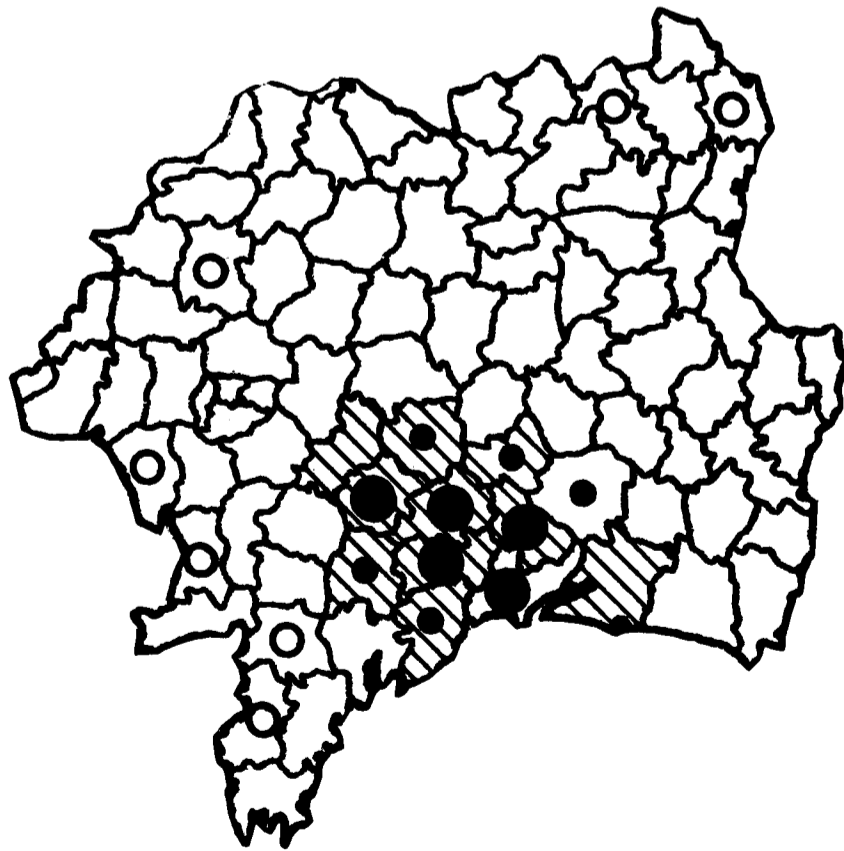
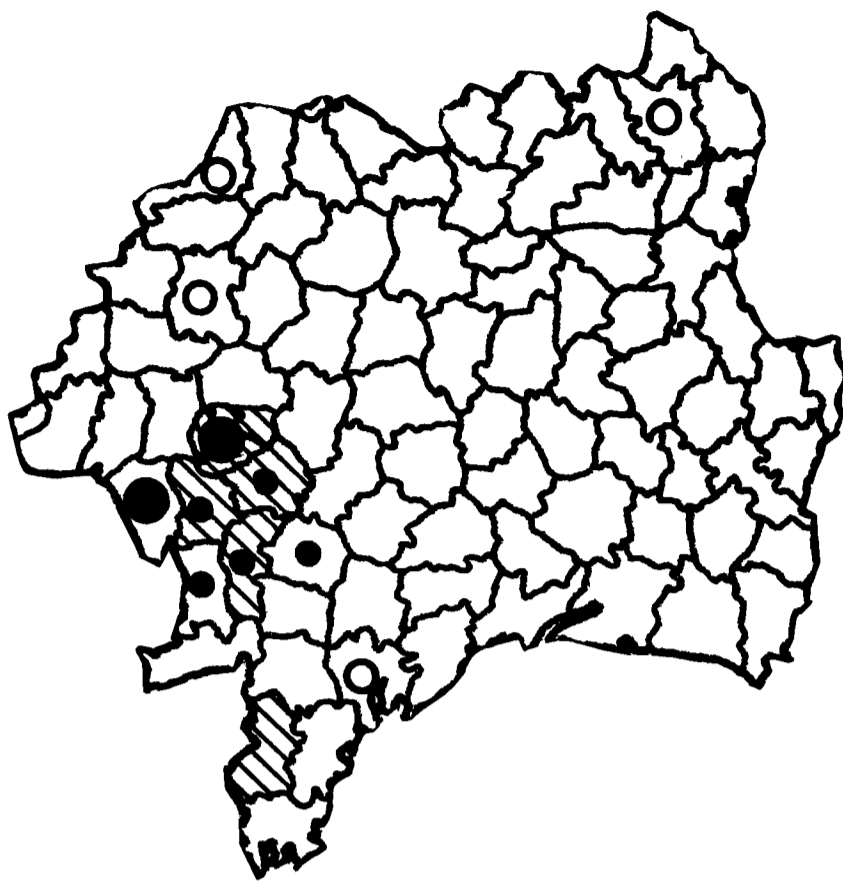


Fig 2.1 (cont.)

7.



8.



departments of the country. The areas which do not contribute to this component lie on the periphery of France. They form an arc from the Vendée on the west coast <sup>to</sup> of Belfort in the Rhineland, and consist of a number of departments from the Alps, Massif Central, Midi and Pyrénées.

This dominance of Paris in the migration schemes within France only comes about by the end of the Nineteenth century, stimulated by transport improvements and the growth of the market economy. Chevalier (1950) points out that in 1848 the migration field of Paris

'se limite encore à l'ensemble des départements qui composent la Région Parisienne. Sa pointe extrême atteint l'Yonne, la Côte d'Or, la Haute-Saône vers le Sud-Est, elle saute du Loiret au Cantal sans toucher les départements intermédiaires.'

This was to the exclusion of whole regions of France:

'il est particulièrement intéressant de voir presque entièrement fermées, à cette époque, à l'action Parisienne, des régions entières, comme le Massif Armorican, le Poitou et les départements du Massif Central qui n'émigrent pas habituellement vers Paris.'

However by 1891, Paris was drawing in migrants from all areas, although only a very few from the far distant south, and in particular was attracting migrants from the Massif Central and Brittany, where natural growth combined with agricultural hardship provided the stimulus to severe and prolonged emigration. These two groups occupied

distinctive social areas within Paris, consisting of particular occupational categories (domestic servants from Brittany, masons from the Limousin); which is well documented elsewhere (Chambart de Lauwe 1952, Ogden and Winchester 1975).

By the end of the century Chevalier summarises the dominance of Paris thus:

'A partir de la fin du XIX<sup>e</sup> siècle, au contraire, nous le verrons, l'ensemble de la France participe aux migrations vers Paris et la proportion des départements méridionaux se fait chaque année plus grande.'

The areas not contributing to the Paris component, are not merely peripheral but are adjacent to the other major urban centres of France. It is clear from components 2, 3 and 4 (Figs. 2.1.2, 2.1.3, 2.1.4) that they form the hinterlands and source areas for the major provincial cities.

Component 2 delimits the migration hinterland of the port of Bordeaux,<sup>1</sup> which consists of twelve contiguous departments, half of which also send significant numbers of migrants to Paris. Component 3 exhibits a similar pattern focused on Bouches-du-Rhône with its port centre

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<sup>1</sup>The assumption that all migrants to the département of Gironde are going to Bordeaux is a reasonable one, and similarly to Marseille (Bouches du Rhône), Lyon (Rhône) and Toulouse (Haute-Garonne). The same assumption is made by Chatelain. These large cities account for approximately 50% of the département's population and 80% of the in-migration.

of Marseille, and to a lesser extent on Var. Its hinterland is less compact, extending east and west along the coast of Provence and Languedoc, and also northwards up the Rhône valley in the department of Drôme; showing at this early date the importance of communication networks. Component 4 centres on Lyon, and to a lesser extent on Isère (Grenoble), drawing on twelve contiguous departments and one nearby department, Bouches-du-Rhône.

These three components focus on the main provincial centres which are located at a sufficient distance from Paris to escape its complete domination. The contiguity of the hinterlands reveals the underlying rural to urban movement, with only very limited inter-urban migration suggested by the inclusion of Bouches-du-Rhône in the Lyon component. The hinterlands are not, however, exclusive to the particular city, but as in the case of Bordeaux, are shared by the more all-embracing system of Paris.

The validity of these hinterlands is confirmed by reference to the hinterlands delimited by Chatelain (1971) for Lyon and Marseille, using percentages of migrants to those cities in 1891. Chatelain, in considering the migration fields of Paris, Lyon and Marseille delimits an extended migration axis 'une zone allongée de la Seine-Inférieure et du Nord à l'Isère', whence migrants are predominantly attracted to the major agglomerations. The areas least attracted by these agglomerations are in the

South West; the Landes, Vendée, or Aquitaine sending only 1 in 8 or 1 in 10 migrants to the city, compared to 1 in 2 for some departments in the migration axis. This is, to a certain extent, misleading, as Bordeaux is relegated to the status of a minor centre.

Those departments sending at least 1% of all migrants to the major centres of Seine, Rhône, Bouches-du-Rhône and Gironde in 1891 are shown in Fig.2.2. This shows that those South-Western departments mentioned by Chatelain are indeed the major contributors to Bordeaux and give direct confirmation of the validity of these migration hinterlands.

Components 5 to 8, (Figs. 2.1.5, 2.1.6, 2.1.7, 2.1.8) exhibit a different character. They focus not on a single department containing a major provincial city but form interconnected, more complete closed migration systems of interdepartmental flows.

Component 5 (Fig. 2.1.5) consists of eleven departments of Languedoc-Rousillon and the Western Midi which sent migrants to four of these eleven departments, primarily to Haute-Garonne, Aude and Hérault but also to Tarn. Only one of these departments has a major urban centre - that of Toulouse (Haute-Garonne). This system, located between the centres of Bordeaux and Marseille, and formed from some departments contributing to those components, consists of areas which are both origins and destinations. It suggests

Fig 2.2 1891 Departments sending migrants to major cities.

a. Paris



b. Lyon

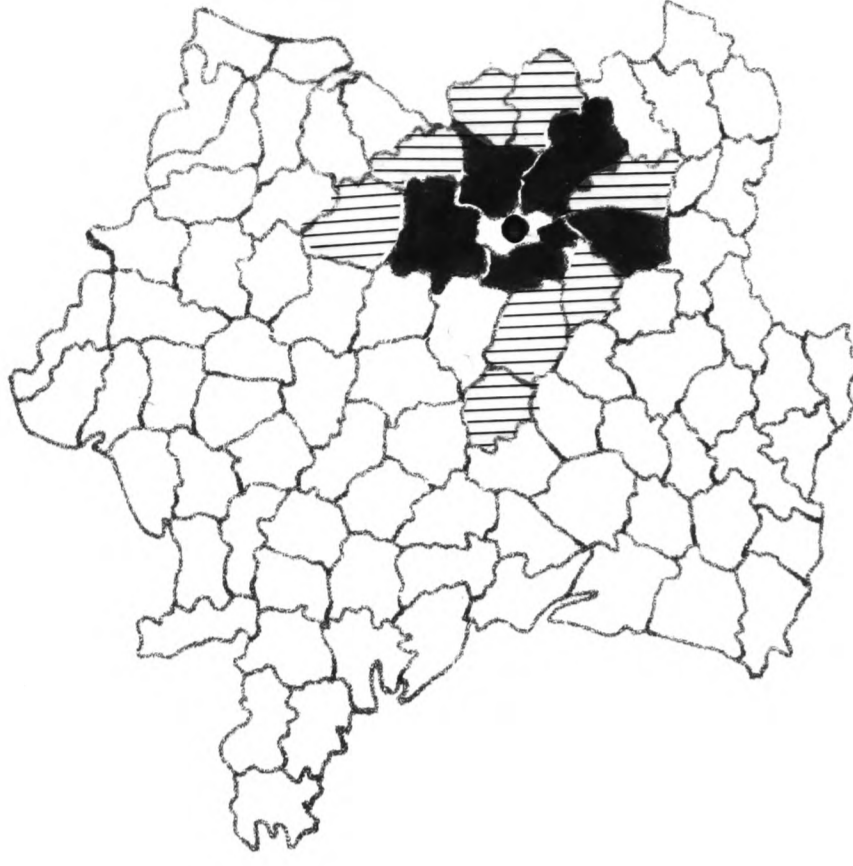


Fig 2.2 (cont.)

c. Marseille



d. Bordeaux



local movements for agricultural and employment purposes rather than more permanent migration channelled towards a major centre.

Component 6 (Fig.2.1.6) exhibits a similar structure to that of component 5, but is even more interlocked and interconnected, almost every department occurring as both an origin and a destination in a complex system of twelve departments covering Brittany, Basse-Normandie and the Lower Loire. These departments also send migrants to the Paris region as shown by the significant scores for this area.

Component 7 (Fig. 2.1.7) is another complex system consisting of twelve departments in an enlarged Poitou-Charentes area. The system is differentiated by negative scores<sup>1</sup> from other systems (Normandy, Brittany, Maine, Var, Hautes-Alpes). The final interpretable component (Fig. 2.1.8) reveals a smaller complex system of origins and destinations in the Lower Seine and Upper Normandy, with Morbihan as a non-contiguous contributor.

Thus in four areas of Western France a complex pattern of movement is shown. Many parts of France have long traditions of local, often temporary, migration. The best known of these, the movement of masons from Limousin to

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<sup>1</sup>Scores with a sign in the opposite direction to other scores and loadings. This interpretation is supported by Tinkler (1972).

Paris, developed by the end of the nineteenth century into permanent, almost chronic movement (Corbin 1971). However, other types of migrations have been documented; Brunhes (1952, pp.148/9) paints a picture of the movements and life style of the packmen (colporteurs) from the mountain regions, while the movements of agricultural labourers following the harvest have been portrayed elsewhere (Agricultural Census 1929: Department Volumes).

This type of essentially local movement has been demonstrated in the Côte d'Azur by Kayser (1966) and also by Imbert (1959) and in the Auvergne by Estienne (1958). In the department of Vendée it has been calculated that over half (54%) migrants have travelled to neighbouring departments, a further 25% remained in the west, and about 15% left for Paris (Bureau d'Etudes Economiques et Statistiques: Vendée, 1964). Merlin (1971, pp.53-63) suggests that the final diffusion of migrants would be wider; and Mendras (1967) finds a progressive movement in the Massif Central using some small towns as relay centres. However, the full complexity of local movements is as yet poorly known.

The P.C.A. of gross migration flows in France has extracted the main axes of variation in 1891, which may now be considered in the light of existing knowledge of French internal migration. There is a clear hierarchy of migration systems, building up from the local inter-

connected components (5 to 8) which show short-distance rural-rural or rural-urban movements, to the regional hinterlands of the three largest provincial centres. Bordeaux, Marseille and Lyon all draw upon their own district hinterlands, which are, however, strictly localized in comparison with the national source area of Paris. Paris is at the top of the migration hierarchy, drawing upon most of France, as expected from its dominant role in the urban hierarchy and political life of France.

An example of the way in which the step-wise hierarchy of movement may operate is provided by the departments of Gard and Hérault. These two southern departments occur in component 5, both as origins, and Hérault as a local destination for migrants. Both then contribute migrants in a hierarchical fashion, to the closest major centre, Marseille, which in turn supplies Paris. Gard and Hérault both also supply migrants directly to Paris so direct movement from rural areas to the metropolitan capital coexists with step-wise migration. (See Vallarché (1953) for a supporting view of this dual movement.)

The inhibiting effect of distance is apparent in all the migration components but above all in the rôle of the provincial cities. A distance effect is noticeable in two ways. Firstly, those cities which attract substantial numbers of migrants are located at a considerable distance from Paris; and secondly their migration hinterlands are spatially constricted to relatively compact and contiguous areas.

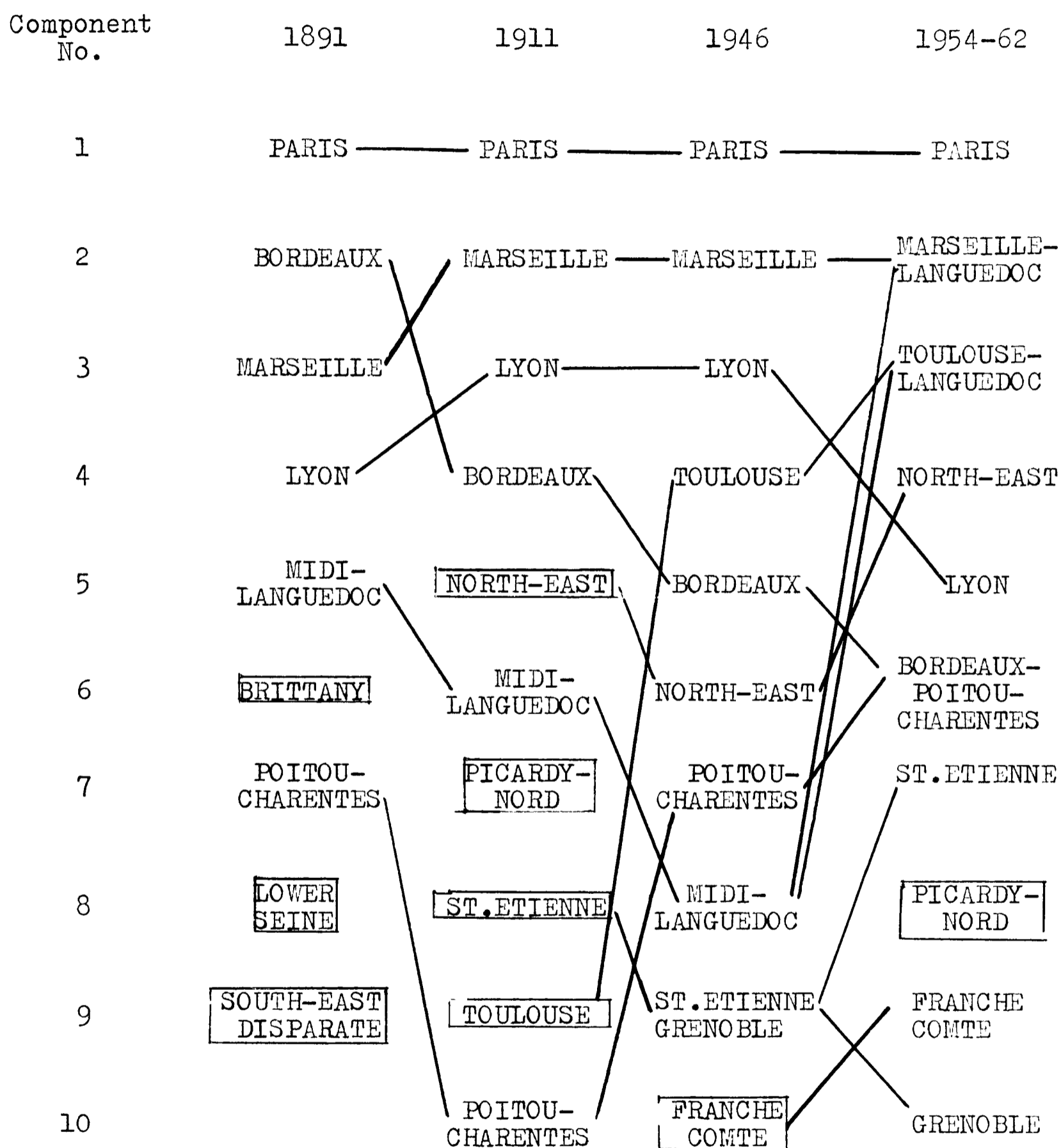
## 2.2. 1891-1911: THE CHANGING ORDER

In the last ten years of the nineteenth century the patterns of internal migration alter slightly. The importance of Paris lessens in terms of variance explained (Table 2.1) and in the number of contributing departments. This relative decline is accompanied by a growing importance of the other components focused on the major regional centres, which explain more of the variance and where hinterlands become slightly enlarged and defined. The relative importance of the three major provincial centres changes, with Bordeaux slipping behind Marseille into third place (Table 2.2). Toulouse and St. Etienne, although not large in population terms, form poles of attraction for restricted areas. Local interconnected systems continue and enlarge, with a new one focussed on Franche-Comté.

These changes, although not presented in detail, form the background to development of the migration system in 1911.

The first component (Fig. 2.3) shows again the national importance of Paris with subsidiary movement to Upper Normandy. Sixty-five of the eighty-eight departments contribute to the Parisian component, and the variance explained is again lower than in previous years. The major provincial urban centres continue to contribute, although as before their hinterlands are divided in their affiliations. Marseille, Lyon and Bordeaux again emerge as major attractions for

TABLE 2.2: COMPONENT INVARIANCE 1891-1962



— Components invariant from one year to another

BRITTANY Non-recurring or new components

migrants on the next components 2-4 (Figs. 2.3.2, 2.3.3, 2.3.4). Bordeaux slips further down the migration hierarchy, corresponding to the much slower growth of the city throughout this period.

Components 5 and 7 (Figs. 2.3.5, 2.3.7) reveal migration systems in the North-East and North of France respectively, emerging for the first time as systems in their own right, the north-easterly component fore-shadowed by the Franche-Comté component of 1901. The increased importance of local movements in these two areas shows the improving transport facilities resulting from developing industrial growth; and the consequent ability to move and need for movement. Components 5 and 7 are both new components, whereas component 10 (Fig. 2.3.10) is the interlinked Poitou-Charentes system which emerged in 1891.

Components 6 and 9 (Figs. 2.3.6, 2.3.9) form an interesting picture of movement within the southern departments. Component 6 is a pattern of interconnected movement, whereas Component 9 - as in 1901 - picks out Toulouse as a major focus. A similar picture is seen in component 8 (Fig. 2.3.8) which defines St. Etienne as a major focus for only four other departments.

Thus in twenty years two new major focus departments have emerged, drawing on restricted hinterlands and emerging late in the component structure. Two new interconnected

Fig. 2.3 Component scores and loadings 1911

1.



2.



Key as for Fig. 2.1

Fig. 2.3 cont.

3.

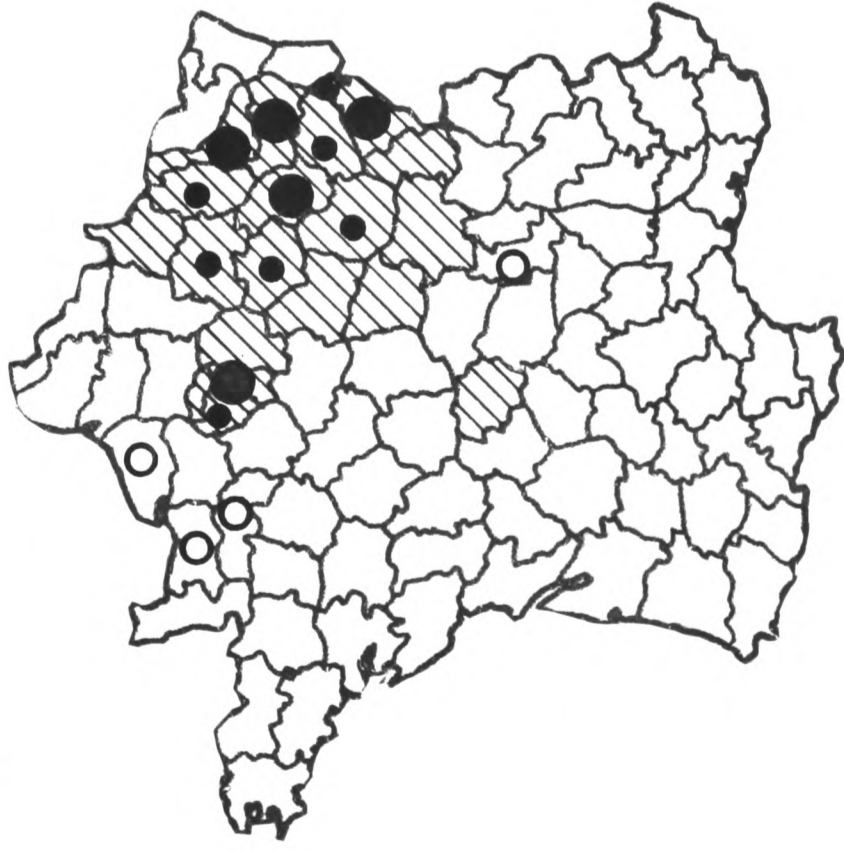


4.



Fig. 2.3 cont.

5.



6.



Fig. 2.3 cont.

7.



8.



Fig. 2.3 cont.

9.



10.



components in the North and North East of France have also developed. The areas developing their own migration sub-systems are becoming more varied and more widespread. In terms of distance decay, and the hierarchy of system and sub-system, however, the characteristics of the migration patterns have remained constant from the earlier period.

### 2.3. 1946: THE POST-WAR SITUATION

From 1891 to 1911 the national importance of Paris in the migration systems of France had declined relatively. Post-war and over the interwar years, however, the Parisian component (Fig. 2.4.1) strengthened in importance, reversing the trend of the earlier years. 72 of the 90 departments of France now contribute to this component, and the variance explained substantially increased (Table 2.1). The few departments which are exceptions to the Parisian dominance form a loose grouping from the Landes in the South-West to the Southern Alps, and north up the Rhône valley as far as the department of Ain. The main urban centres continue to contribute migrants to the growth of the metropolitan capital. There is thus continuation of the strong movement between the major urban centres as well as from the major proportion of rural France towards Paris. It is only those areas in the direct shadow of the major provincial cities which resist the movement towards Paris.

The increased importance of this movement appears to result from a change in migration patterns between 1936 and 1946. During this war period the departments experiencing net gain are chiefly rural ones, many of the urban centres experiencing net loss due to war damage and evacuation. Thus the apparent concentration of movement towards Paris results from two factors: return migration from the country, and relatively less movement to other competing urban centres. Nonetheless, the major provincial centres continue to figure

in subsequent components (Table 2.2).

The major centres now number five, including the city of Toulouse (Fig.2.4.4) emerging post-war as the fourth component, related to its growth in technical and engineering industries. Marseille is now firmly established as the second rank attraction with subsidiary movement to Var and Alpes-Maritimes, where the cities of Nice and Cannes in particular, grew considerably through immigration. Lyon as a destination occurs in third place, while Bordeaux slips further down the migration hierarchy (Fig. 2.4.5) with an ever more disparate hinterland.

Components 6 and 10 (Figs. 2.4.6, 2.4.10) show interconnected migration systems in the North-East of France divided into Northern and Southern halves from the previous North-Easterly component in 1911 (Fig. 2.3.5), while the Poitou-Charentes system (Fig. 2.4.2) remains constant. The Languedoc component (Fig. 2.4.8) is differentiated from the hinterlands of Marseille and Toulouse by negative scores. Similarly division within the Rhône-Alpes system is evident in component 9 (Fig. 2.4.9), which reveals migration to St. Etienne and Grenoble, again differentiated from the Lyon migration system by negative scores.

Thus three major changes in internal gross movements may be discussed.

Fig. 2.4 Component scores and loadings 1946

1.



Key as for Fig. 2.1

Fig. 2.4 cont.

3.



4.



Fig. 2.4 cont.

5.



6.



Fig. 2.4 cont.

7.



8.



Fig. 2.4 cont.

9.



10.



Firstly,

There is an increased focus on Paris, changing the trend of the earlier period, which may be explained by changes in migration patterns brought about by the dislocation of the war period. Also the early date of the census after the war meant that this dislocation was still severe. (See Ch.1.4). The increased movement to Paris does, however, more than account for the increased total explanatory power of the components. Therefore, the movement to Paris is at the expense of other cities in the urban hierarchy. Despite this relative decline Toulouse still emerges as a new major focus for migrants.

Secondly,

At the turn of the century a hierarchy of rural, urban and Parisian movements was established. However, within the major provincial systems of Lyon, Marseille and Bordeaux increasing differentiation has occurred. Toulouse has emerged as a major independent centre dividing the hinterlands of Marseille and Bordeaux and indeed annexing much of the latter. Lyon has in turn become differentiated from movement to Loire (St. Etienne) and Isère (Grenoble). This within-system differentiation is allied to the growth of new urban areas, and although some rural interconnected systems remain in the North-East and Poitou-Charentes a new hierarchy of urban-oriented systems and sub-systems is in formation, to replace the old rural-urban-Parisian hierarchy of the pre-war period.

Thirdly,

A major change evident in this post-war period revealed by the component structure (Table 2.2) is the shift in emphasis of the migration systems away from the West of France. There are now two Languedoc components, two North-Eastern, and two Rhône-Alpes. On the West coast there is now only an even more disparate Bordeaux hinterland and an interconnected Poitou-Charentes system of lessening importance. The rural depopulation of the west and the lack of urban destinations means that Paris is the only major destination for migrants, who therefore are forced to move relatively longer distances than migrants in the Eastern half of the country. This change in component structure furthermore reflects the importance of the developing Rhône corridor not only in the migration patterns, but in the economic structure of France as a whole.

#### 2.4. 1954-1962: THE NEW PATTERNS ESTABLISHED

The first component (Fig. 2.5.1) emerges, as expected, as the Parisian migration hinterland. It is now apparent that the increased importance of Paris evident in 1946 was a temporary phenomenon related to changed migration characteristics. The variance explained drops again to 28% from 41% in 1946, and the number of contributing departments drops sharply to 59. The pattern of these departments also changes dramatically. The influence of Paris falls upon the surrounding area and draws heavily on the West and Centre particularly Brittany and the Massif Central, but is not significant in a complete band in the East of the country; reflecting the growing importance and independence of the Rhône-Rhine corridor subsystems becoming apparent in 1946.

Component 2 (Fig. 2.5.2) is a combination of the Marseille and Languedoc components, while component 3 (Fig. 2.5.3) is a combination of the Toulouse and Languedoc components. The Languedoc area, previously distinct from the two major centres, now divides its loyalties, and Toulouse poaches from the Bordeaux hinterland. This division of the Languedoc hinterland reflects the re-orientation of the internal migration patterns towards larger urban areas.

Many of the other components continue. Components 4 and 9 (Figs. 2.5.4, 2.5.9) are again interconnected Eastern and North-Eastern subsystems. Component 6 (Fig. 2.5.6) is

Fig. 2.5 Component scores and loadings 1954 - 62

1.



2.



Key as for Fig. 2.1

Fig. 2.5 cont.

3.



4.



Fig. 2.5 cont.

5.



6.



Fig. 2.5 cont.

7.



8.



Fig. 2.5 cont.

9.



10.



a combination of the remnants of the Poitou-Charentes and Bordeaux subsystems, as the Western migration destinations decline further and Paris draws more heavily on the Western areas. Component 8 (Fig. 2.5.8) is an interconnected Picardy-Nord component as found in 1911 but disrupted in 1946.

One of the main features evident in 1954-62 is the continued differentiation within the Rhône-Alpes system. The Lyon component (Fig. 2.5.5) is the major destination for the Rhône-Alpes with minor destinations in Drôme and Savoie. The movement to Drôme is accounted for by a very substantial migration from Ardèche, and to Savoie by influx of population to develop the tourist potential of the area. Also within the Rhône-Alpes is the department of Loire with its major centre of St. Etienne which extends its hinterland in component 7 (Fig. 2.5.7) throughout the Limousin and Massif Central. The last component (Fig. 2.5.10) is a new feature focussing particularly on Isère and also on Ain, forming the third component of the Rhône-Alpes region.

Thus from 1954-62, despite a change in the type of data (see Chapter 1.4) the major trends continue. Paris again declines in relative importance: the Eastern systems become increasingly differentiated: and the Western systems decline further. This serves to confirm Courgeau's view that the change in data type is not of fundamental importance, involving only a lessening of the number of migrants and not significant changes in direction of flow (Courgeau, 1970, pp.16-17).

### 2.5. 1962-68: REGIONAL ANALYSIS

The principal component analysis of flows from 1962-68 is restricted to inter-regional movements, involving a considerable generalization of information, the total amount of information consisting of an origin-destination matrix of (21 x 21) rather than (90 x 90). The components do, however, serve to confirm some of the patterns emerging from the earlier analyses. The more generalized level of the data accounts for the very high level of explanation achieved (Table 2.1). There are only three significant components, but the others remain interpretable.

All components focus on one or two regions; in general they reveal a localized hinterland and generalize known complex movements, as in the Poitou-Charentes which is shown merely as an origin for migrants to the Pays de la Loire (component 10). However, some interesting factors emerge. The first component (Fig. 2.6.1) shows movement to Paris from all but two of the régions de programme<sup>1</sup>. Component 2 (Fig. 2.6.2) is the Rhône-Alpes system: with all three Rhône-Alpes destinations amalgamated it now assumes a role in the migration systems of France second only to that of Paris itself. The final significant component again focuses on Provence-Côte d'Azur.

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<sup>1</sup>Corsica is excluded because of the smaller population size in relation to other régions de programme, and the greater unreliability of the census for sample data because of this.

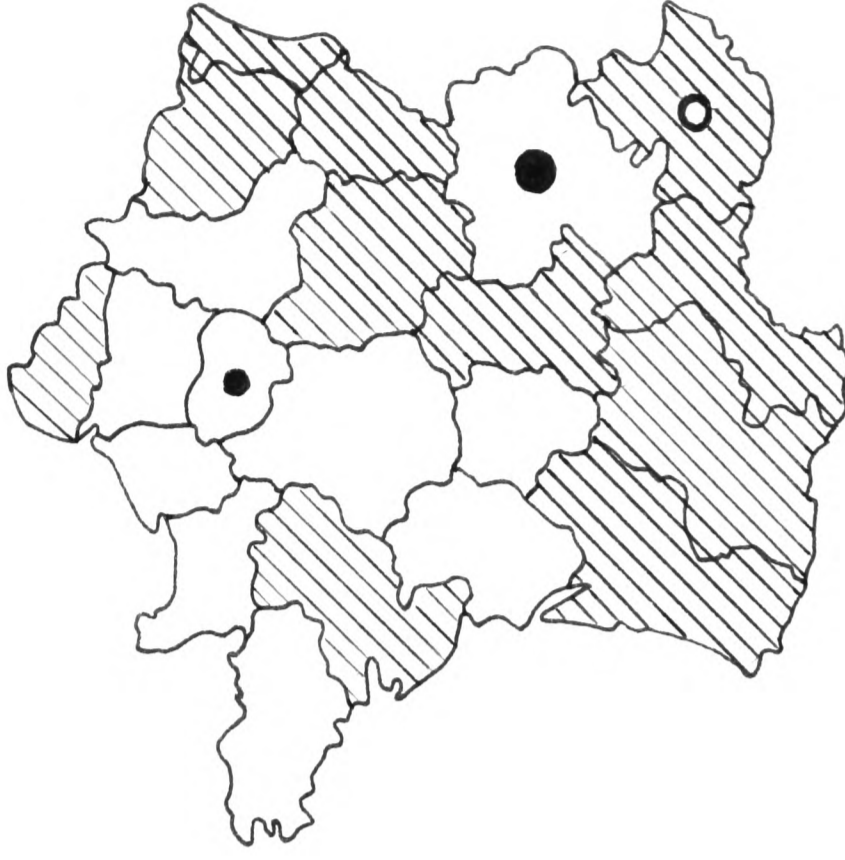
Component 7 (Fig. 2.6.3) reveals a migration pattern suggested by Fielding (1974). It is movement from Paris to its surrounding areas - the régions de programme of Centre and Picardie. This out-movement is symptomatic of metropolitan decentralization of residences and industry, a decentralization which in the case of industry has in general located within 200 km. of Paris, because of problems of accessibility and perceived isolation with continued distance from Paris (Thompson 1973). This component also shows movement from Paris to Provence-Côte d'Azur which suggests not so much inter-urban movement in the reverse direction to former years, but migration to cities such as Cannes and Nice which boast attractive scenery, warm climate and an active social life. These Provençal centres form one of the important counter-magnets to Paris not only for retirement and pleasure, but also for new industrial and service development.

Fig. 2.6 Component scores and loadings: Regions 1962 - 68

1.



2.



Key as for Fig. 2.1

Fig. 2.5.3 1962-68



## 2.6. CONCLUSIONS

This examination of the French systems of inter-departmental migration over the period 1891-1968 offers some interesting conclusions. Firstly, it is clear that the technique of Principal Components Analysis has managed effectively to extract the basic patterns of migration, with little loss of explanatory power, by reducing a very large input matrix to 10 major variables. The gradual loss of explanatory power over time is a function of the increasing complexity of movements: when movement is highly centralised as in 1946 or generalised as in 1962-68, the general level of explanatory power is higher.

In the early period from 1891-1911 a clear cut situation of a three-fold hierarchy of migration systems exists with Paris as the dominant focus for most of France supplied by both rural areas and the major urban departments; while the major provincial centres draw migrants from their own regional hinterlands, and local movements form interconnected systems of migration.

However, in the later period this system breaks down. Over time the Eastern regions have become progressively more important, and a regional dichotomy emerges between East and West.

In the West the function of Bordeaux as an absorption centre declines consistently over time, its hinterland

divided between Paris and Toulouse. The lack of major foci in the West brings about direct movement from rural departments to Paris. Emigration from Brittany to the rest of France and in particular Paris has traditionally been of major importance (see for example Michel (1972), Pitié (1971), Merlin (1971)). From the 1960s the migratory balance has been improved by the policy of urban development of Rennes, Nantes-St.Nazaire, and other smaller towns. However, as Michel points out, many migrants to Brittany are either unsuccessful Parisian migrants or retired people, so that the population loss tends to be the young and the higher qualified, while the population returning to Brittany is relatively unfavourable for the social and economic development of the region (see also, Lepape (1970)).

Thus the West is still dependent on Paris, although the position evident from the migratory balances appears more favourable. In the East, however, a number of sub-systems based on the individual cities has developed in the Rhône-Alpes, and rather more complex systems in the North and North-East, reflecting the more dispersed character of industrialization and urbanization. The more complete urban hierarchy of Eastern France does provide a series of migration foci, but drawn into these independent systems of migration are two areas where emigration is becoming heavy and prolonged: the Southern Massif Central and the departments of Lorraine.

It is clear that throughout these 77 years Paris has been the dominant destination for internal migrants in France. However, over this time her influence has declined relatively, with the exception of a phase of increased centralisation during the interwar years and the Second World War. Indeed the attraction is no longer to the City of Paris itself which has since the Second World War suffered net emigration. The attraction is to the wider metropolitan area, and in 1962-68 all the other 7 departments of the Paris region had notable net gains. It is really only by 1968-75 that the widespread metropolitan decentralization that Fielding notes begins to emerge as a dominant influence in internal migration patterns. Over this 7 year period not only the centre of Paris itself lost population by migration, but also the two departments of Hauts de Seine and Seine St. Denis, while the gain of the remaining departments by migration, except Seine et Marne, has been lessened.

The attraction of the Paris region over time has been exerted on an increasingly restricted geographical area. It draws most of all on the areas of rural depopulation of the Centre and West; this feature of its hinterland explaining the constant proportion of rural and urban migrants both pre- and post-war noted by Pouchet. On the other hand the local hinterlands of the major provincial cities have been extended. These regional migration systems have focused on the major provincial centres of Marseille,

Lyon, Toulouse and Bordeaux, and to a lesser extent St. Etienne, and in more recent years on smaller demographically buoyant cities, such as Grenoble. These cities are all at a distance from Paris sufficient to maintain their own regionally-distinct migration hinterlands. This factor of distance from Paris, together with economic factors in their growth, such as the implantation of the aeronautics industry in Toulouse, has supplemented the direct pull of the population size of the large cities.

Distance has not only affected migration patterns by benefiting large cities distant from Paris. The effect of distance in curtailing hinterlands - whether that of Paris being restricted to exclude the Southern departments, or the most local system - has been noted throughout this chapter.

Furthermore, the influence of distance has lessened over time, particularly evident in the extension of the hinterlands of the large provincial cities. Spatial variations are, however, evident in the lessening friction of distance. Migrants from Western France may move further than formerly, in movement to Paris rather than the local movements characteristic of the early years of this century. In the East of France the 'distance threshold' may even have contracted as the necessity for long-distance migration has receded, with the emergence of urban

counter-magnets<sup>1</sup> to Paris. This spatial variation in distance effects is implied in the hierarchical structure of movement, discussed above.

Moreover, the changes in migration systems over time and the distinction between East and West are of importance in two respects. Firstly, the dependance of the West on Paris and the relative independence of the East has been both a contributory cause, and symptom of French regional inequality. Secondly, the hierarchy of system and sub-system evident in the early period has been replaced by independent urban-orientated systems of various sizes and attractions for migrants.

Thus the urban hierarchy model, the step-wise nature of population movement and the effects of distance decay have all become modified over time in the national French context. This analysis of the gross migration flows in France 1891-1968 by principal components analyses has shown that distance and hierarchy work together, but in a more complex fashion than the simple juxtaposition suggested by the gravity model.

Chapters 3 and 4 examine further the migration context of the areas of gain and loss, and in so doing may offer

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<sup>1</sup>For an appraisal of 'Métropoles d'équilibre' see Hansen (1968), Clout (1975).

some explanation for continuing population decline in areas such as Brittany and the Massif Central, and the continued attraction of the large urban areas. Chapter 3 in particular examines the agricultural backcloth to rural out-migration, while Chapter 4 examines wider social and economic characteristics, contrasting the environment of out-migration and in-migration areas and their changes over time.

Chapter 3 - Agricultural Development and Population Change

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1. Agricultural Development and Population Change:
2. The Agricultural Backcloth
  - (a) The First Agricultural Revolution: The sixteenth century to 1789
  - (b) The emergence of Scientific Agriculture: 1789-1891
  - (c) Regional Disparities in Agricultural Development before 1891
  - (d) 1892 - 1945 Agricultural Depression
  - (e) The Second Agricultural Revolution
3. Agriculture and Migration
  - (a) The Agricultural Data Base
  - (b) The delimitation of Agricultural Areas
  - (c) Agricultural Areas and emigration

'some of the outward contrasts in this age of transition are striking enough to the casual visitor. In a Brittany farm kitchen a huge TV set stands by the ancient open fireplace, but there is no running water; near Avignon, one son in a farmer's family hoes potatoes while his brother goes to work at the nearby plutonium factory; in the chalky uplands of the Aveyron, an old man vacantly minds the cows while his son brings home fertiliser in a smart new Simca'.

(Ardagh 1970 p.121)

### 3.1. AGRICULTURAL DEVELOPMENT AND POPULATION CHANGE

Of central importance to any study of the spatial variation in population change is the nature of agriculture and its rate of development in different areas.

As the agricultural sector develops so labour and capital is released to fuel the growing industrial and tertiary sectors of the economy, because more food can be produced by fewer agricultural workers.

Rostow (1960), in his seminal work on the stages of economic growth within the recent past, attributes to agriculture a triple role in the support of other sectors of the economy. Agriculture is seen as contributing to:

- (i) feeding a growing urban population, by increasing the food supply;
- (ii) creating 'key' leading sectors, e.g. machinery, fertilisers;
- (iii) Providing capital.

In France, agriculture in the period 1891-1945 certainly fulfilled the functions of supplying food and capital, but above all it provided an increasing pool of redundant labour which took part in a vast redistribution of population from the rural to the urban areas.

It is really only from the post World War II period that this tide has been stemmed, and in some cases reversed. But it is only since 1945 that agriculture has been able to provide the stimulus to 'key' sectors of industrial

development, for example in providing a market for chemical and engineering industries.

However, the influence of agricultural development on population movement is neither simple nor uniform. Agriculture varies considerably both between and within the different regions of France, in response to differences in climate, terrain; consequently agricultural practices and specialisations are also variable. This variety in agriculture leads to very varied requirements for labour, and also determines the type and frequency of improvements applicable. Thus a Northern department such as Seine et Marne, with a mild climate, rolling terrain, fertile 'Limon' soils and a proximity to major markets, has farmers specialising in the advanced production of cereals and consequently has had a very high demand for labour in pre-war years, but also a high potential for labour-saving improvement in later years with the introduction of fertilisers and machinery. On the other hand a department such as Isère, with a much more dissected landscape and a more Southerly and Alpine climate has pockets of intensive farming, but many areas where little more than subsistence polyculture is practicable. Consequently labour demands have been high, whereas potential for improvement is much less: there is then a choice of alternatives, either to improve agriculture and to support a relatively high agricultural labour force; or to abandon marginal agriculture in favour of urban life.

It is this complex relationship between type of agriculture and population requirements and thus movement, that this chapter aims to elucidate. To do this it is necessary to first determine the structure and characteristics of the major agricultural regions, their spatial distributions and their changes over time. The agricultural regions are then related to out-migration from these areas.

### 3.2. THE AGRICULTURAL BACKCLOTH

By way of an introduction to the state of French agriculture in the twentieth century a short history of agricultural development up to that time is given. Two main periods of change are involved, the early agricultural revolution between the Renaissance and the French Revolution; and a period of gradual development in the nineteenth century.

#### 3.2(a) The First Agricultural Revolution: The Sixteenth Century to 1789

The development of agriculture in France has been subject to considerable scrutiny by a number of scholars. One topic of particular concern has been the nature of change itself. Generally the concept of an early 'Agricultural Revolution', as in England, has been replaced by a concept of gradual change, the origins of which have been located earlier and earlier in time. Chevalier A. (1946) has outlined advances up to the mid-sixteenth century, when the effects of Renaissance influences showed that agriculture, like other branches of human activity, was not immutable but susceptible to progress and as such could benefit from the advances of science. Bloch (1934) considers that the changes which took place after the Renaissance may be conceived as a revolution despite occurring gradually. He clarifies such a distinction thus:

'The innovations we are about to consider may indeed amount to a 'revolution', if this is taken in the sense of a 'profound change'. But it was certainly not in the nature of an unexpected shock, interrupting centuries of impassivity. Nor was it an abrupt mutation. It spread itself out over many years, even centuries. And nowhere was this gradualness more evident than in France.'

Indeed change must have been not only gradual but intermittent. In Languedoc, Le Roy Ladurie (1966) has pointed out that the process of land consolidation was interrupted by phases of subdivision in a cyclical fashion.

The Agricultural Revolution itself, is considered by Bloch to have two fundamental characteristics, not necessarily contemporaneous:

- (a) the progressive disappearance of collective practices from regions where they had previously been dominant,
- (b) the introduction of new techniques; particularly the cultivation of 'artificial' forage crops in the eighteenth century.

The influence of these developments was not uniform but affected different areas in different ways.

Collective practices and in particular communal grazing on the fallows, were never the objects of wholesale reform, but in particular areas - especially Provence and Normandy where the legal system was particularly advantageous - were attacked by landowners wishing to conserve their hay, or sow their fallow, and so gradually disappeared. The

reduction of communal obligations was encouraged by the technical revolution in the introduction of artificial crops, which allowed the reduction of the fallow area.

The practice of fallowing gave the land a rest from continuous cultivation, particularly of corn, and also provided grazing for livestock. The problem was double-edged; if the fallows were abandoned, more fertiliser (dung) was needed, yet the grazing area had been reduced. The solution was the cultivation of 'artificial' forage crops, either leguminous crops, artificial grasses, or root crops such as turnips and potatoes.

The introduction of artificial meadow had further consequences. Firstly, potatoes, introduced early from America, were cultivated only on a small scale in the Eastern Provinces for fodder; but at the end of the 18th century they became much more widely disseminated to become a staple of peasant diet. Secondly the artificial meadow meant a break up of the old biennial or triennial system of rotation, with longer leys, and longer and more flexible rotation cycles. The breaking of old-established rotation habits was stimulated by the English example and other favourable factors, particularly the increasing population and the desire to be free of imported food. The combination of improvements led automatically to improvements in sheep rearing and breeding.

These improvements can obviously be seen as resulting

in an increase of the productivity of the land and thus providing the potential to support an urban population. However, they were by no means widespread. Arthur Young in his travels 1787-9 deemed only three areas to be prosperous - Flanders, Alsace and the Vallée de la Garonne. Elsewhere he considers the agricultural potential to be under-exploited chiefly because of the scandalous waste of fallow land. The basic structure of farming remains essentially similar to the pattern established in earlier centuries:

'Down to the eve of the nineteenth century, the rural life of France is dominated by a simple, ancient and probably indigineous word, blé ... By far the greatest part of cultivated land was devoted to blé (corn in its closest English equivalent)\*. Corn held a pride of place in every village and on every estate. It was cultivated even on ground apparently unpromising, rugged alpine slopes, and those water-logged lands of Western and Central France, soaked with incessant rain, which to us might seem more appropriate as pasture. In 1787 the commissaries of the Provincial Assembly of the Orléanais could still remark 'agriculture in the great majority of the provinces of France, may be considered a huge factory for the production of corn.'

(Bloch, p.21)

The improvements that did occur were to the benefit of only some of the population. The progress of enclosures and new practices was spurred on by the Revolution of 1789, which brought the downfall of the seigneurie of the Ancien Régime, and thus freed the

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\*Translator's addition

bourgeoisie and peasantry of charges to the nobility. This favoured the better-off but not the really poor.

'Quant au prolétariat rural, la Révolution ne lui a donné que des miettes; il a perdu une partie de ses usages par le partage et le vente des biens communaux et la clôture des regains et des jachères'.

(Chevalier p.102)

For those with insufficient resources to benefit from the transfer of land, there was no alternative but to become landless labourers. The mass of itinerant labourers contributed to social unrest, the misery vagabondage and mendicity prevalent both before and after the Revolution. The social tension of this period is seen by Sée and Augé-Laribé as a contributory factor in the relative stagnation of agriculture from 1789 to the middle of the nineteenth century.

### 3.2(b). The emergence of Scientific Agriculture 1789-1891

The stagnation after the Revolution is a matter of general agreement, and is mentioned by Sée (1924), Lavergne (1860), Augé-Laribé (1941), Sion (1932) and others. There is less agreement on the date of the rebirth of progress, although Pautard (1965) takes this to be about the year 1840. Other dates proposed are:

Sée	1840-1845
Lavergne	1815-1850
Weber (1974)	c.1870

There is no doubt that from the Revolution to the Napoleonic Wars there was little progress in agriculture. From the 1830's and 1840's however, progress is revealed in a different way from the improvements of earlier years. These latter years mark the beginning of theoretical and administrative improvements in agriculture, while the reduction of fallow, extension of artificial grassland, and increased potato growing are of less significance, although continuing. The theoretical and administrative improvements take the form of improvements in agricultural education, the publication of agronomic treatises, and publication of agricultural statistics.

The publication of two major works on agronomy are deemed to have had a major impact on agriculture, particularly when combined with the upsurge of available agricultural statistics and education. The two major works concerned are by Boussingault (1834) 'L'économie rurale dans ces rapports avec la chimie, la physiologie et la météorologie' and by the Comte de Gasparin (1843) 'Cours d'agriculture'.

Agricultural education became organised in the 1820's and 30's with the formation of the first private agricultural colleges, at Grignon (Lorraine) and Rennes (Brittany). Plans for the reorganisation of the private system were laid down during the Second Republic by the law of 3rd October 1848 which anticipated a three-tier system of -

- (a) fermes-écoles (at a cantonal level),
- (b) écoles-régionales
- (c) L'école Normale Supérieure de l'Agriculture de la France.

However this grand plan never came to fruition. Only a very few fermes-écoles were established, and the écoles-régionales - for both theoretical and practical agriculture - never materialized. It was not until 1875 that the Institut Agronomique really began to function efficiently. Nonetheless the concept of agricultural education - a science that could be taught and developed rather than assimilated by intimate contact with the land - had become established.

The agricultural progress which did occur after the crises of the late 1840's and early 50's<sup>1</sup> was recorded in the decennial enquiries 1840-1892, and the patterns of land holding and land use in the Cadastre<sup>2</sup>. The increase in agricultural production from 1840 onwards is calculated by Pautard (see Fig.3.1). 1892 is the base year (100) and the progression is logarithmic. It shows clearly the massive increase in the value of production from 1840 (27) to 1882 (93). This increase in production is attributed by Chevalier to the development of agronomic science and to the greater liberty of the French peasantry after the Revolution, and the later repeal of the corn annual agrarian system.

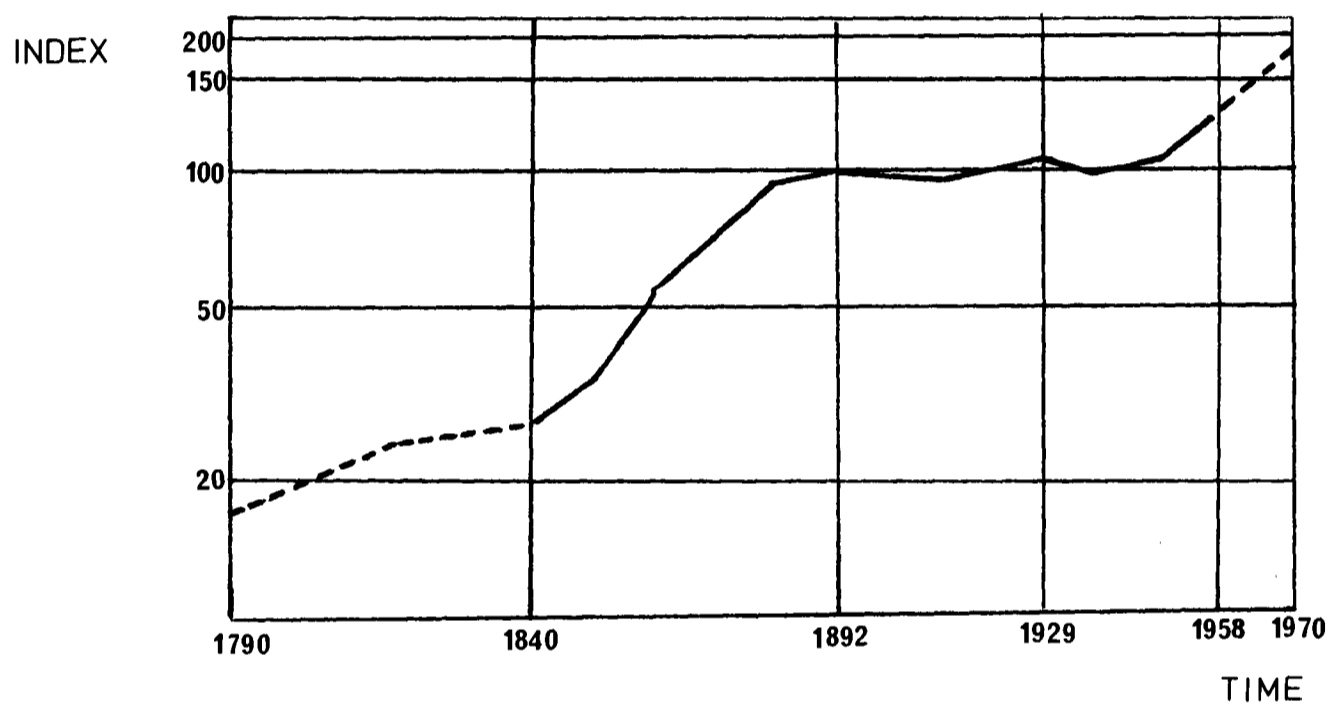
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<sup>1</sup>

1846	potato blight
1847	poor harvest, famine
1848	political crises
1849	cholera
1853-55	poor harvests

<sup>2</sup> See introduction on data sources for the development of Agricultural Statistics.

Fig. 3.1 The growth of French agricultural production  
1790 - 1970



SOURCE : J. PAUTARD

Base Index : 100 in 1892 (Constant francs)

'Dans la courte période qui s'étend de 1791 à 1880, c'est-à-dire en moins de quatre-vingt-dix ans, la liberté et la science agronomique, déjà en formation ... ont plus faits pour le bien-être de l'humanité et pour le développement de ces intérêts moraux et matériels que la longue série des siècles antérieures'. (p.99)

In reality the improved production must also be in part attributable to the more practical and mundane factors of an increasing urban population, a greatly improved transport network and a rapidly developing marketing system. The greater interchange of goods and men between regions allowed regional specialisations to develop and production to increase. Furthermore greater livestock production was becoming possible as the improvements to grassland became more widespread; and production of corn was facilitated by the extension of the cultivated area and the perfectioning of the plough.

Thus to 1891 there is strong evidence of gradual improvement in agriculture, although with a phase of depression from 1789 to c.1830. The improvements noted have been primarily biological and agronomic, with administrative and theoretical improvements in the 19th century. However, they have not been uniformly distributed throughout the country. J. Chombart de Lauwe (1946) records the fragmented nature of agricultural evolution, and ascribes this to the variation in the 'pays', the crops, and the livestock specialisms throughout France. This spatial variation in agriculture up to 1891 thus becomes an important focus for research.

### 3.2(c). Regional Disparities in Agricultural Development to 1891

Spatial variations in French agriculture were recorded at the time of the French Revolution by Young and after the turn of the century by Peuchet (1808). Young distinguishes seven types of agricultural area, listed in the accompanying table 3.1.

Table 3.1. Agricultural Areas according to Arthur Young 1787-91

Soil/Relief Category	Constituent Areas	Corn bushels per acre
1. Limons Riches	Nord, Bassin Parisien, Bas-Rhin, Vendée, Vallée de la Garonne	25
2. Bruyères	Bretagne, Basse-Normandie, Maine, Sud de la Garonne	19
3. Terrains Calcaires	Eastern & Southern periphery of Bassin Parisien, Poitou-Charentes	18
4. Gravier	Bourbonnais, Morvan	18
5. Sols pierreux	Lorraine, Bourgogne, Franche-Comté	13.5
6. Terrains montagneux	Massif Central, Sud-Est, Littoral Méditerranéen	12
7. Limons Divers	Limousin, Berry	14

The index of productivity shows that it is only the 'limons riches' which are prosperous. The growth of lucerne is noted as an encouraging sign in parts of the Nord and Bassin Parisien which are otherwise relatively poor, due to the 'scandalous waste' of fallow land. In general, the Ile de France

and Picardy are 'scandalously neglected', while some measure of improvement is evident in Normandy, Poitou, Gascony and Touraine.

This pattern of neglect is completely changed in the 19th century. Throughout the 19th century the essential phenomenon in regional disparities is the improvement of the Paris region where agriculture was so severely criticised by Young. Both Sée and Labourne note the ploughing-up and disappearance of fallow land 1815-40 in Picardy and the Paris Basin.

'Aux environs de 1850, les communaux et terres incultes y ont presque totalement disparu, les jachères ont reculé des deux tiers, un quart des bois à été défriché tandis que s'étendait progressivement le froment ..... ' (Pautard, p.19)

It was from this nexus that innovations spread: the Limousin was in stagnation until 1850-60 when signs of re-growth emerged stimulated by transport improvements (Merlin 1971). The leading regions in improvement, the Paris Basin and Alsace-Lorraine, stopped expanding the area of production from 1852 to 1892 whereas the regions such as the Limousin and Brittany intensified production at that time. Thus in the middle of the nineteenth century there existed very marked regional disparities recorded and analysed statistically by Pautard. Regional variations in agricultural production reached their minimum in 1892; and from 1892 onwards some regions developed more than others so that the disparities increased again.

Reproduced below is a table of dispersion parameters for different indices of agricultural production, over the period 1840-1958 (table 3.2). A dispersion parameter such as the coefficient of variation shows the degree of dispersion around the mean and thus the range of that variable between departments. The period giving a lowest value is **marked**, i.e. when there is least spatial variation in agricultural productivity.

The evidence is summarised by Pautard as follows:

'Dans l'ensemble, la période 1882-1892, qui marque une rupture dans la croissance du produit agricole (see graph earlier), apparaît une fois de plus comme un tournant. Les indices par hectare font apparaître un **resserement** très net de dispersions jusqu'en 1892 (ou 1882) et une accentuation de ces dispersions après 1892'. (p.54)

Over the period as a whole the dispersion or variability of production by hectare diminished while national production increased; but when recession set in nationally the regional variations became wider<sup>1</sup>.

Thus 1892 appears as a turning point in French agricultural history for two reasons: firstly as the general climax of the first 'agricultural revolution', and secondly as a consequence of this, the era of minimum regional variations in agricultural advance. Since that date agriculture has undergone increasing regional inequality.

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<sup>1</sup>This is a similar phenomenon to 'the regional problem' in both France and Britain: problem areas suffer more in times of economic recession, whereas all areas benefit more equally from economic boom.

Table 3.2.

Dispersion Parameters for Indices of Agricultural  
Production 1840-1958

INDICES PER HECTARE				
	Gross Product	Yields		
	per ha.ag.land (excl. woods) coeff.var.	Corn coeff.var.	Potatoes coeff.var.	Fodder beet coeff.var.
1840		26	45	35
1852	44	25	31	31
1862	38	19		
1882	29	18 <sup>1</sup>	24	29
1892	28 <sup>1</sup>	19	19 <sup>1</sup>	28 <sup>1</sup>
1912		25	35	
1929	42	21		
1937		31	35	
1948	<span style="border: 1px solid black; padding: 2px;">60</span>	<span style="border: 1px solid black; padding: 2px;">35</span>	<span style="border: 1px solid black; padding: 2px;">36</span>	44
1954	46	30	33	<span style="border: 1px solid black; padding: 2px;">46</span>
1958	48	26	31	

Source: J. Pautard

1 indicates lowest value

  indicates highest value

It is this inequality and its effects on population mobility which forms the focus of the second part of this chapter. First, however, the general trends of agricultural development are traced from 1891 to the present day.

### 3.2(d). 1892-1945: Agricultural Depression but Signs of Hope

The period from 1892 onwards forms the context for this present study. Pinchemel summarises the state of agricultural change during the period as follows:-

'At the very time when agriculture was acquiring the means for development (financial resources, transport infrastructure, machinery and land improvements) it entered on a long period of stagnation. Weakened by the exodus from the country which left behind only the oldest and least enterprising, affected by economic crises, either general or peculiar to agriculture, and lulled by a deceptive protectionism, the majority of the country districts remained dormant, clinging to their out-of-date traditions. The only regions to escape were those best situated near the large concentrations of consumers, and those with the advantage of fertile soil or of a strong country-born middle class, who were open to progress and had begun to specialise ever since the 1870's.'

(p.266)

In conclusion he says, 'from 1910 to 1946 French agriculture scarcely developed at all'. This finding appears unduly pessimistic. The wars were undoubtedly devastating, as was phylloxera in the South, and the effect of protectionism was stultifying. However in this period there is evidence of changing structure,

brought about in part by the difficulties experienced. Machinery, fertilisers, livestock breeding and land holding systems were all undergoing gradual evolution for the better. It is this coexistence of stagnation and improvement which accounts for the increasing regional disparities in agricultural production.

First, some attention must be paid to the problems. The effects of the First World War were without doubt the major cause of the decline in French farming. The effects of the war as seen by Demangeon in 1920 were threefold -

- (a) Production of food was halted so France had to import from abroad,
- (b) Goods and property were destroyed; there was thus a need to reconstitute, made more difficult by the loss of the means by which new wealth is created, i.e. exchange (trade),
- (c) Multitudes of men were killed, removing a major source of energy and vitality.

The loss of life, goods and production are likened to the disastrous effects of the 100 years' war or the 30 years' war but are in fact seen as worse:

'Ces comparaisons ne suffisent pas à l'intelligence du présent parce que la grande guerre a été un fléau d'une grandeur jusqu'alors inconnu'.

(Demangeon 1920 p.20)

The loss of agricultural production was in effect a continuation of the trend evident from the turning-point

of 1892 (see Fig.3.1). However, it was accelerated by the destruction of the land itself, especially in the Northern regions where there was widespread destruction of forests and arable land as well as factories, houses and mines. In this area good farming land had become 'transformée en un désert, en une steppe sauvage, en un champ d'éruptions'.

(Demangeon, p.33)

As a result of the loss of production massive imports of food were required: grain from the U.S.A. and meat from South America. The changing balance of imports and exports is shown in the accompanying table 3.3.

Table 3.3. IMPORT-EXPORT BALANCE 1905-1918

	<u>IMPORTS</u> (millions francs)	<u>EXPORTS</u>	<u>BALANCE</u>
1905	4788	4866	+ 88
1913	8421	6880	- 1541
1914	6422	4869	- 1533
1915	11036	1937	- 9099
1916	20640	6215	- 14425
1917	27553	6012	- 21541
1918	19915	4144	- 15771

The competition from abroad in grain lead to a sharp drop in the price of corn: in 1880 the average price stood at 39 fr. a quintal, by 1900 at 20 fr. and even by 1914 was only at 25 fr. (J. Chombart de Lauwe p.88) The drop in prices had two results, firstly to eradicate marginal corn

production, and secondly in the adoption of protectionist policies from as early as 1882. The drop in marginal corn production is seen in the reduction of arable land from 1892-1929, especially in the South.

'La concurrence des produits d'outre-mer, qui s'est traduite à la fin du XIX siècle par des importations massives, a déterminé un déplacement de la culture du blé du Midi vers le Nord de la France'.

(Chombart de Lauwe, p.90)

One can see why this is so. Docteur E. Rey (1908) gives an indication of the inefficiency of small-scale corn growing in the département of Lot: (Table 3.4).

Table 3.4: Expenses of Cultivation per hectare of corn: Lot 1908

	Fr.		
Loyer du sol	45		<u>Harvest value</u>
Frais généraux: impôts, assurance	20		
Frais de culture	45	Grain 9.6 hl à 17 fr	163
Semence	35	Paille 12 qx à 3fr 50	<u>42</u>
Fumure	60		<u>206</u>
Recolte, battage etc.	<u>45</u>		
	<u>250 fr</u>		

(Source: Docteur E. Rey) 1908

However such a picture may be unduly pessimistic as not all the expenses should necessarily be included, particularly labour costs. Nevertheless it does give an indication of the

difficulties under which the peasant farmer worked; and an insight into the reasons for dropping the cultivation of corn in the South-West where yields were poor and cultivation uneconomic.

On the other hand the introduction of protectionist laws worked against market forces and served to bolster the inefficient farmer, who otherwise would have been driven out of business. The notorious reforms of the 1860's culminating in the Law of 1892 introduced under Jules Méline, then Minister of Agriculture, pushed up high tariff walls to protect the farmers from outside competition, but they merely fostered stagnation. Later governments continued with the policy, handing out subsidies and tax relief, but the farmer's discontent was not assuaged, nor his lot substantially improved.

Such were the effects of lost agricultural production, combined with a protectionist policy. Perhaps of even greater significance was the loss of population itself. The total of lost or dead over the period was higher in France than any other country, except Germany:

France	1,385,000	Italy	468,000
G.B.	930,000	Germany	2,140,000

This loss, chiefly of men of working age, was a blow to any hopes of revitalising agriculture. In many areas, it was said, that there were -

'pays agricoles dont la terre dut chômer  
faute de travailleurs'.

**Demangeon** saw the answer in mechanisation and the  
'remembrement' of farms with the slogan -

'Don't use a man where you can use an animal;  
don't use an animal where you can use a machine',

but at that time men, machines and animals were all in short supply. The need for food post-war and the lack of alternative opportunities checked, for a time, the rate of rural exodus. From 1891 to 1929 the number of agricultural workers reduced only slightly from 6.5 m to 6 million, with a high proportion of women working (29% in 1891 but 37% by 1929, but 50% in agriculture). The increase may be due in part to more complete enumeration of working women (always difficult to estimate in agriculture), but there is no doubt that there were relatively more workers per unit of land producing no more in terms of output than in 1892.

Another solution to the problem of labour shortage was the importation of foreign labour. Some emigrants returned from abroad as the labour situation in the U.S.A. deteriorated. Cheap foreign labour flocked to the agrarian lands, permanently settling in the South West or taking the place of the indigenous itinerant 'moissonneurs' of the North and Centre. The enquiry by **Demangeon** and **Manco** in 1939 reveals about 250,000<sup>1</sup> foreign workers mostly in the South.

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<sup>1</sup>This number is derived from the ag. census of 1929 and the population census of 1931 and is probably an underestimate, as it relies on declarations by interested parties.

**Manco** cites the complementary needs of French agriculture on the one hand, and of the foreign workers on the other, as the essential motivation for this movement:

'Tout d'abord la désertion rurale et la pénurie des travailleurs français dans les campagnes sont s'accroissant, même en période de crise économique: un pressant besoin de main-d'oeuvre reste permanent dans l'agriculture. D'autre part, les étrangers, menacés de chômage dans les usines et dans les mines, se dirigent vers les travaux agricoles pour éviter le chômage ou le rapatriement. Le mouvement de la main-d'oeuvre industrielle étrangère vers les campagnes est signalé à peu près dans toutes les régions, mais plus spécialement dans le Nord et dans le Bassin aquitain'. (p.7)

The distributions of permanent and temporary foreign workers are shown on the accompanying maps (Figs 3.2, 3.3). They show a dual distribution: in the North Belgians, Slavs and Poles following the harvest:

'Les saisonniers Belges font d'abord la moisson dans la région sud du Bassin Parisien (Beauce, Loiret, Yonne), puis celles plus lentes à mûrir de la Brie et du centre du Bassin, et finalement celles des blés et des avoines tardives du Nord (Picardie, Aisne, Nord). De là, les saisonniers regagnent la Belgique ... (p.12)

Although some stayed for the beet and potato crops of the Nord, where they were joined by a new influx of workers.

The Spanish and Italian workers of the South were prepared to endure extremely arduous conditions to stay permanently. Their initial acceptance of poor living standards enabled them to save to buy land, and ultimately to assist in the revitalisation of agriculture. They were

Fig. 3.2 Distribution of permanent

foreign workers c. 1930



Fig. 3.3 Distribution of temporary

foreign workers c. 1930



■ > 10 per cent of all workers

▨ > 1 per cent

not hidebound by the traditions of the French; therefore they were innovators in the use of more modern methods of rotation, introduction of new varieties of wheat, of machinery, of artificial fertilisers and the use of horses for draught purposes. This latter innovation and the use of beet for fodder helped to transform the agriculture of Aquitaine; and to bring it into the twentieth century.

However another staple of Southern agriculture - the vine - had also been badly hit in these years, by phylloxera and its associated troubles.

'One after another they came, first the oidium fungus or grape mildew, next the phylloxera insect, and then two more funguses, the mildew and the black rot: all failed to bring about the permanent destruction of the vine'. (Brunhes, (1952) pp.95-96)

Phylloxera attacked the vineyards of Southern France, appearing at Floriac, Gironde on 11.6.1869 on vine roots, which had apparently been suffering for two or three years. By 1877 practically the whole département had been invaded, and very little of Southern France escaped. Mildew and black rot set in some time after 1885. After years of research it became evident there was a need for an integral reconstitution of viticulture, with resistant crops and a transformation of methods of cultivation. As with corn, marginal production was severely reduced but the great vineyards remained in operation:

'Les grands crus, les grands vins, sont restés à peu près **immuablement** à la place que depuis des siècles leur avait assignés la sagesse de nos ancêtres.' (Lafforgue 1937)

while around them the smaller vineyards reverted to wood or 'landes'. In the early years of the twentieth century production reached the heights of the 1850's-60's although with half the former surface area of vineyards. However this state of affairs did not last long. A multiplication of new small vineyards arose, enjoying a superficial prosperity after the war years, as the prices of wines rose.

Thus there were many difficulties in this period of stagnation. The war had brought about huge losses of life, goods, livestock and production. Protectionist policies helped maintain inefficient and marginal farms. The opportunities for a restructuring of viticulture after the phylloxera crisis were being rapidly lost as small vineyards producing 'vin ordinaire' re-emerged. However there were some indications of progress, with the increasing use of machinery instead of man-power, of fertilisers; improved livestock breeding and systems of land-holding.

Perhaps the most obvious symbol of improvement was the mechanisation of agriculture which stands in contrast to the former period. By 1892 only the plough was improving, and then only in particular areas. In Hte-Vienne the changes in mechanisation from 1892-1929 had been profound:

'La transformation de l'outillage agricole a été profonde depuis la dernière enquête décennale de 1892. Au début du XIX<sup>e</sup> siècle l'agriculture limousine ne possédait, comme matériel d'extérieur, que l'ancienne charrue du bois dite 'chambige' ou 'raballe', la herse, des charettes à boeufs et à vaches, à deux roues, des tombereaux et quelques instruments à main, faux, fourches, et rateaux de bois, le taille-pré, la brioche, la tranche, la hache, la faucille, et le volant.'

(Dept.Ag. Vol ,Hte-Vienne, 1929, 383-3)

By 1850 the first plough 'Dombasle' appeared and the heavier 'Bonnet' for land clearance. By 1900 the first 'Brabant'<sup>1</sup> ploughs were in use and had become very popular post-war. In these difficult areas the less advanced plough types coexisted with the more modern, each used for different purposes; they had had the simple wooden plough in upland areas for centuries but the area of the wheeled plough had formerly been confined to the more open spaces of the North (Bloch).

'L'antique ariau de bois dont on se sert encore pour les semailles, les plantations de pommes de terre, les façons d'entretien (buttage notamment) avait été remplacé par la charrue araire Dombasle dans la préparation des terres. Celle-ci vient d'être supplantée à son tour par la charrue brabant double, partout où le sol est suffisamment profond et n'est pas trop rocheux; 17,633 brabants sont déjà en service en 1929 à côté de 44,711 charrues.'

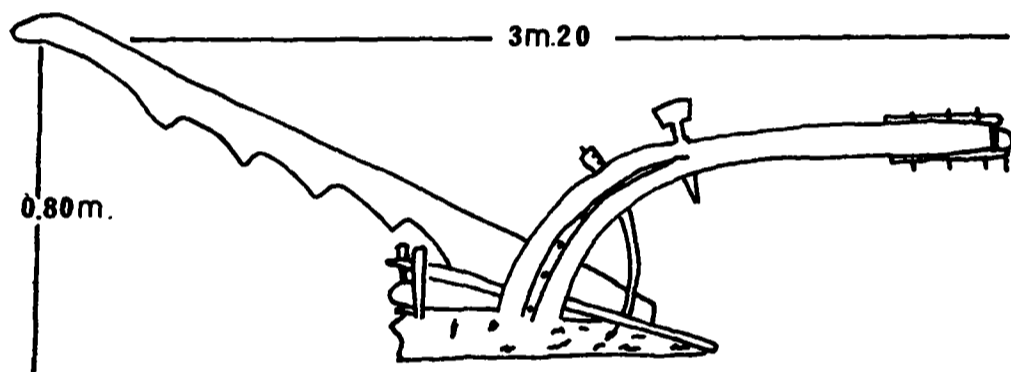
(Dept.Ag.Vol. Hte-Loire, 1929, p.189)

The method of innovation diffusion is indicated by the same writer, and is applicable not only to ploughs but also other new machinery:

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<sup>1</sup>The Brabant plough named after the Belgian province where it was developed, was a metal plough with a forecarriage and, as a rule, a pair of ploughshares.

Fig. 3.4 The ancient wooden « Chambige » or « Raballe »  
plough c. 1900



SOURCE : Dept. Ag. Vol. Hte. - Vienne 1929 p. 283

'De nombreux forgerons de campagne, imitant de façon convenable les bons modèles qu'ils avaient à réparer, ont offert aux agriculteurs et aux viticulteurs des charrues, des herses, des roues de leur fabrication à des prix avantageux'.

The adoption of machinery other than ploughs was a function of the agricultural specialisation of the area concerned, but more specialised machinery did not come into use until after 1918. Even then a first appearance must not be confused with general use. This includes potato harvesters and planters, reapers and binders, and tractors.

A second major development during the period 1892-1945 was the spread of artificial fertilisers. Until the end of the nineteenth century, and in some cases later, fertilisers consisted chiefly of animal manure, with regional use of other sources principally seaweed (coastal areas, especially Brittany); and human wastes 'gadoues' around the major towns (used after a three-month fermentation!). Manure of any sort was in chronically short supply, which (together with unimproved seeds) accounts for the very low yields in arable agriculture<sup>1</sup>. As late as 1929 the Departmental volumes of the Agricultural Census were metaphorically <sup>holding</sup> up their hands in horror at the fertilising practices still occurring. In many areas the 'facheuse' habit of direct manuring of growing corn was still reported, meanwhile

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<sup>1</sup>Bloch estimates 1:4 or 1:8 in good areas.

'Les engrais potassiques sont peu employés, les engrais azotés (nitrate de soude mis à part) presque inconnus de la masse des petits agriculteurs; le nitrage de printemps est encore peu généralisé.' (Gironde)

Nitrate of soda and other superphosphates were a popular choice with small farmers for their rapid and showy results especially in the vicinity of Bordeaux where large factories were sited. The departmental monograph for Hte-Vienne mentions only superphosphates and sodium nitrate, the consumption of which is shown below:

Table 3.5: Consumption of Fertilisers - Hte Vienne 1929

	Sodium Nitrate (tonnes)	Superphosphates (tonnes)
1895	40	-
1900	80	1500
1913	80	6000
1924	300	11000
1929	11900	14000 <sup>1</sup>
1933	840	9500

(Source: Dept.Ag.Vol: Hte-Vienne, p.391)

However the northern areas devoted to cereal cultivation were advanced in all aspects of agriculture, and this included their use of chemical fertilisers, which became essential as monoculture became more widely practised.

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<sup>1</sup> N.B. Post-war increase in consumption then decline with economic depression.

'Les cultivateurs de Seine et Marne se sont placés au premier rang pour l'application des méthodes scientifiques qui reposent sur l'emploi des engrais commerciaux, et ils ont pu maintenir et agrandir leur ancienne renommée, au milieu de circonstances difficiles.'

(Dept. Ag. Vol, Seine et Marne, 1929, p.7)

A third major advance of these years was the improvement of livestock breeding, consequent on the improvement of fodder from artificial grasses. It was not until the 1880's that herdbooks for improved strains of cattle were introduced. In general the numbers of animals had declined from 1892 but the quality had improved. The reduction in the national herd was due in part to war requisitions for cattle and horses, but also due to the reduction of fallow and replacement of manure by artificial fertilisers, and to shortage of labour, particularly shepherds.

In the poorer areas the number of animals fell only slightly as peasant farmers still preferred a numerous herd to a quality one, despite the looming fear of epidemic Tuberculosis. In areas such as Hte-Loire the abuses were manifold; by 1929 there had been almost no improvement in fodder, stabling or breeding.

Often the conditions for animals were appalling. Fodder was poor and unimproved. Stabling was archaic - 'ni air, ni lumière, ni litière, aucun soin'. The main problem was that the native strains of cattle were expected

to serve all purposes; they were often considered 'comme un mal nécessaire' for draught purposes and to provide manure. The same beasts were meant also to provide milk, meat and raise calves. As well as fulfilling all these tasks cows also suffered from being weaned too early (to sell the mother's milk) and were then put to the bull too early (to save time and therefore money) and so were weakened in condition even before their first calf was born. This weakness was passed from generation to generation, exacerbated by a poor, even random, choice of bulls, not conducive to improvement and possibly conducive to in-breeding. Some bulls were castrated at an early age, and were then used for draught until the age of 8 - 10 years (car ils n'atteignent souvent son complet développement qu'à cet âge) when they were sold for slaughter. This length of growing period compares to a maximum of  $2\frac{1}{2}$  - 3 years under present-day breeding circumstances. No wonder the peasants ate little meat - apart from being scarce it must have been tough old stuff!<sup>1</sup>

However in some areas improvements were proceeding rapidly. The Montbéliard breed, of Swiss origin found in Franche Comté and Savoie was described thus in 1880:

'Peu améliorée, apte à tout, rustique, certes, mais impur de sang et de conformation. En quelques années, va alors s'opérer une véritable transformation de ce cheptel à tous poils'.

(Dept. Ag. Vol, Jura, 1929, p.208)

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<sup>1</sup>Indeed, peasants only ate pork: butcher's meat (beef) being an urban commodity (Weber).

The herdbook was started in 1889. The development of transport to Burgundy and Paris, and competition from the beef cattle of the Charolais, forced the development of this rustic breed into a dairy breed, favoured by the land, climate, relief and altitude of the region (and by the high price of cheese).

Similarly beef breeds emerged of world quality. By 1939 the improved breeds of Charolais and Limousin had become world-renowned through careful selection, better feeding, better pastures, and improved care and hygiene. The local breeds and cross-breeds were declining in the face of competition from specialist cattle, bred for either milk or meat; the hardy breeds bred for draught work were also dying out, (including those such as the *Bazardaise* (Bordeaux region) or the Villard-de-Lans (Isère). The better quality of meat coupled with higher living standards was a major factor in the increased consumption of meat.

One final factor in agricultural improvement was the change which occurred in methods of farm- and land-holding. Much has been written of the adverse effects of equal inheritance laws dating from Napoleonic times, and not improved until 1938-43; but possibly even worse were the effects of *métayage* or share-cropping. Arthur Young in 1789 talked of *métayage* thus:

'In this most miserable of all the modes of letting land, after running the hazard of losses,

fatal in many instances, the defrauded landlord receives a contemptible rent; the farmer is in the lowest state of poverty; the land is miserably cultivated; and the nation suffers as severely as the parties themselves.'

Since that time France has had a higher proportion of tenant farmers , who have had an incentive to improve, since the farmer sees a much greater return from any investment he makes. With métayage<sup>1</sup> both capital and turnover profits accrue to the landlord, at least in part. Métayage may be thought of as a theoretically justifiable division of responsibility with one partner providing the capital, the other partner the labour. In practice however it is a system that militates against innovation and improvement, due to lack of security and incentive: leading almost inevitably to a poverty of polyculture (Pinchemel 1969 p.246). It was most widespread in the South and West, and in 1946 métayage was replaced by a 'statut de fermage' which firstly gave greater security from eviction, and secondly ensured that the farmer retained at least two-thirds of his profit. By 1954 the proportion of land worked by métayage had been reduced to

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<sup>1</sup>Métayage has many diverse forms, ranging from merely hay-making obligations to a neighbouring farmer, through 'tigrage' in the South West (incorporating a 3rd party of temporary labourers for harvest and hay-making, paid up to one-third of the harvest). In Brittany the system of 'bail à domaine congéable' stems from the 5th century (one partner owns the land, the other the buildings) and was described in 1929 as 'un obstacle à toute amélioration foncière et partant, à l'intensification de production,' (Morbihan) as all buildings had to be renewed in exactly their old form including all mud huts.

6.3% of all farms<sup>1</sup>; but all the problems are still not resolved, as rents are often fixed at such a low level that the landlord still has no incentive to keep the farms in repair or make improvements.

Thus in a time of general agricultural depression there were some signs of improvement. However the structure of agriculture was still weighted in favour of a peasant economy rather than an intensive food-producing process, and by 1945 there had been little government attempt to radically alter structures: in fact government policy had bolstered the small family farming unit. In 1903 a 'Service des Améliorations Agricoles' (Agricultural Improvement Service) was set up by the Ministry of Agriculture, which was renamed the 'Service du Génie Rural' in 1918. The work done by this body in the provision of infrastructure - notably soil improvement and public facilities including electrification - improved the living standards and working conditions of the farmer. Other aids to more modern development are to be found in the development of cooperatives: and the provision of better and less usurious credit by the Crédit Agricole (formed in 1906).

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<sup>1</sup>The changing structure of land tenure is shown by the following data:

	1882	1955	
Owner-occupation	59.8	55.3	% of land
Tenant farming	27.2	38.4	
Share-cropping	13.0	6.3	

However, although this period had undoubtedly seen the change from bread-line farming to an era of small, protected farms, there was little commercial farming, and the agricultural sector was lagging behind other sectors of the economy. Significant improvements were sporadic affecting mainly Northern France and very gradual, as their acceptance often meant the change of a whole way of life<sup>1</sup>. Furthermore the timing of phases of improvement was not continuous. The war of 1914-18 was a severe setback to agricultural development while the decade of 1919-29 was a period of reconstruction and relative prosperity (1929 Ag Census: Preface). Following this to the Second World War is -

'une période pleine de difficultés ou toutes des branches de la production sont, les unes après les autres, atteintes dans leurs oeuvres vives'.

The Second World War dealt a further blow to a weakened agriculture. Chevalier views the physical destruction with despair -

... 'Et que de ruines accumulées sur notre sol de 1940 à 1945. Cinquante mille fermes au moins sont détruites et doivent être rééquipées!'

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<sup>1</sup>For example -

The introduction of scythes instead of sickles for harvesting meant that women and the old could no longer work in cutting but only binding and carrying. The later introduction of the reaper-binder produced hay and straw bales too heavy for women to handle: gradually their work in the fields disappeared, as did their gleanings. But it was not until gleanings were no longer economically important that this practice became widespread in upland areas.

(Enquête sur l'Ag. Calvados).

... la guerre de 1939-40, l'occupation allemande, l'absence de nos agriculteurs prisonniers, enfin les destructions survenues lors de la libération allaient ruiner l'agriculture française beaucoup plus complètement encore que ne l'avait fait la guerre de 1914-1918'. (p.115)

This destruction may have been a blessing in disguise. In the years that followed the need for reconstruction presented an opportunity for radical changes from the traditions, conservatism and protectionism of the pre-war era. The French were not slow to grasp this opportunity. This postwar phenomenon of major advances in agricultural practice has been called the Second Agricultural Revolution.

### 3.2(e) The Second Agricultural Revolution

As the 'Economist' of November 6th 1976 observed:

'We all know the French farmers, don't we?  
He's that slow-moving clod who:  
(in comparison to 1950)

- \* spreads five times as much fertiliser as in 1950;
- \* harvests  $2\frac{1}{2}$  times as much wheat per hectare (rather more today than the British farmer, once far ahead);
- \* gets twice as much milk as in 1950 from his cow;
- \* has made maize, scarcely grown 25 years ago, into a major crop;
- \* and whose numbers (family and hired help included) shrink about  $7\frac{1}{2}\%$  a year, while output rises, in volume, 2 -  $2\frac{1}{2}\%$ .

The most dramatic changes may be seen in the declining number of farms and farmworkers, and the rise in the average size of farms (Table 3.6).

Table 3.6 Changing farm structure 1892 - 1976

	No. of farms	No. of farmworkers	Av.farm size (ha)
1892	5,702,752	6,647,044	8.65
1929	3,966,430	6,098,512	11.64
1955	2,260,000	5,135,360	14.10
1970	1,587,473	3,460,700	20.8
1976	1,200,000	2,300,000	26.6

Source: OECD estimates 1976

N.B. Population censuses differ in their estimates of agricultural population

1892 6,535,599

1929 7,704,180

This change to more concentrated and larger farming units has been most marked since 1955, and indeed since 1963, although it has not been easily achieved. The roots of this second revolution lie paradoxically in the depression of the 30's and the war of 1939-45. These earlier conditions, which kept younger men on the land who otherwise might have left, and the loss of many of the agricultural population during the war and occupation, left on the one hand a more progressive agricultural community and on the other a younger generation of farmers on the land.

This young and enterprising generation is now rapidly ageing with a high proportion of farmers over retiring age,

many of them with no successor from enforced celibacy. As these farmers disappear and their land is bought by neighbours or improved by other means, so the momentum of concentration is maintained.

However the restructuring of agriculture was not the first priority immediately post-war. As in 1919 the basic task was reconstruction. As reconstruction progressed successfully, the problems of inflation hit farming. It was only through severe political pressure that structural measures were brought about. Ardagh sees the post-war development like this:

'When peace came the immediate task, as in industry, was physical reconstruction. In 1945 food production was down to half its pre-war level, due to the fighting and especially to the mass deportations to Germany. The First Plan made farm machinery (tractors and fertilisers) its top priority outside industry, and the results were striking. The number of tractors rose from 35,000 or so in 1938-45 to 230,000 in 1954, and farmers were encouraged by law to form State-aided groups for the joint buying and use of machinery. Productivity rose rapidly and output was soon well above its pre-war level. At the same time, the much-needed rural exodus was gathering pace. It began to look as if French small farming might make some progress at last. But after about 1948 the real danger emerged: rapid industrial growth and its attendant inflation hit the farmer badly, for food prices did not keep pace. By 1950 industrial prices had risen 50 per cent higher than agricultural ones, compared with their pre-war level; by 1959 the disparity in growth was more than three to one. Yet for much of their spending, for fertilisers and machinery as well as clothes and household goods, farmers had to pay industrial prices out of a rural income.... In 1958 at least half the peasantry were still barely above the bread line.'

(Ardagh 1970 pp.113-114)

It is hardly surprising that the 1950's were marked by rural protests, artichoke riots, and other disturbances reaching a peak in 1957. Palliative measures of price support were introduced which, however, favoured the capitalist farming areas rather than the smallholder of the uplands and South. A new attitude and new leadership of the farming community was found in the *Jeunesse Agricole Chrétienne (JAC)*. This body, born of left-wing Catholicism in 1929, became transmuted during the war into a serious vehicle for agricultural improvement, gaining political muscle by its liaison with the main farmers' union, the FNSEA (*Fédération Nationale de Syndicats des Exploitants Agricoles*) under Débatisse.

The policies advocated became adopted by the Ministry of Agriculture, particularly under Pisani as Minister. For the first time since Méline, price supports were abandoned for investment and structural reform. These important reforms were contained in the *Loi d'Orientation* of 1960 and the *Loi Complémentaire* of 1962. The reforms contained in the law of 1960 were no more than an outline of the principle that agriculture should have parity with other sectors of the economy. Effective action did not occur until 1962, prompted by severe riots in Brittany the previous year, following a seasonal glut and consequent drop in the price of potatoes.

French agriculturalists were demonstrating for progress, this time in marketing structures. In 1962 the Loi Complémentaire brought in decrees to activate the pious hopes of the 1960 law. These improvements in the structure of French agriculture hit at the very heart of the old peasant system of polyculture.

The decline of the peasant mentality must rank as one of the major victories in the battle for economic farming. Peasant farming is a way of life with ancient traditions, concerned more with survival and feeding the family, rather than the production of food for a developing economy or for a growing urban population. In its essentials peasant farming is a family matter; the object of which is to maximise labour input rather than maximise profit: it relies on property as the basis of security; and is isolated from the mainstream of trade in being virtually self-sufficient. The peasant concept was indeed formally supported by government policy in France:

'It became a tenet of radical political thought in the late nineteenth century that social stability was dependent upon the conservation of a solid electoral base amongst the peasantry; it has been fairly easy for the interested parties to confuse the national demographic threat posed by the decline in the birth-rate with the question of rural depopulation and the decline of the peasantry. It has been easy in these circumstances actively to propagate a myth of the peasantry, and at the same time to regard the system of small-scale, rather extensive, little modernised, low-productive polyculture, carrying the burden of too much labour, as portraying the eternal essence of agriculture; to insist upon its protection, and to effect its subsidization.'

(Franklin (1969) pp.72-3).

This myth was dealt severe blows by the laws of 1960 and 1962; however it has still not been completely destroyed. The modernisation of farm structure has been the most effective factor in the decline of peasant farming, while improvements to marketing structure have been slower and of less immediate impact.

The major structural reforms consisted of twin measures to counteract the problem of excessively small uneconomic farms run by elderly peasants. The creation of 'Sociétés d'Aménagement Foncier et d'Etablissement Rural' (SAFER's) (land improvement and rural settlement companies) was of major importance. Their purpose is to regularise the land market, improve agrarian structures and promote the establishment of farmers. These companies purchase farmland as it comes on the market with a view to reselling it, after improvement, to deserving farmers. To enable more effective intervention, the Loi Complémentaire provides for the possibility of giving SAFERs the right of pre-emption.

The second important innovation was the setting up of the 'Fonds d'action sociale pour l'aménagement des structures agricoles' (FASASA) (Social Action Fund for the Development of Farm Structures), administered by the CNASEA since 1964. The main object of the fund is to facilitate the outflow from farming of elderly farmers and farmworkers who are under-employed. This is facilitated by the granting of Indemnité Viagère de Départ (IVD) (Retirement Premiums)

and retraining aids. Secondly it gives help to farmers and farmers' sons who wish to stay in agriculture, by improving the conditions in which they can commence or continue farming. The conditions relating to the granting of these aids were relaxed in 1967, extending IVD's to a wider age group.

Further improvements in farming structure were made by the speeding up of the programme of 'remembrement'; by the exchange of small land parcels which derived from feudal times and partible inheritance. Farming cooperation has also been encouraged with the setting up of the 'Groupements Agricoles Foncières' (GAF) by groups of farmers, and the 'Groupements Agricoles d'Exploitation en Commun' (GAEC). Financial support for innovations was extended by the increased services of the Crédit Agricole (1963-65) to include the granting of real-estate loans.

Complementary to these sectoral measures, more recently emphasis has been placed on an areal approach to rural problems in the designation of 'rural renovation areas', of which there are four - Brittany-Manche, Limousin-Lot, Auvergne, and the mountain zones, amounting to 30% of the country and 14% of the population. The production of local rural development plans (as a counterpart to the Schémas Directeurs in urban areas) has been officially encouraged from 1970.

There have also been attempts to improve the marketing

structures although these have been slow in producing results - there are still high consumer prices and periodic surpluses  $\ominus$  but 'vertical integration' has become as much of a watchword in agricultural planning as has 'animation' in its urban context. Collective negotiations have been seen as a way out of the legendary chaos of marketing and middlemen; and this has been achieved by 'Sociétés d'Intérêt Collectif Agricole (SICA). However they are often poorly supported by the more elderly farmers. Where they are effective, they help to organise the marketing process and protect the farmer against the effects of gluts of production. The detailed provisions of these measures and their means of financing and implementation are set out by the OECD 'Structural Reform Measures in Agriculture' (1972), pp 89-139.

These improvements in structure have gone hand-in-hand with the continuation of the mechanical revolution and even more importantly, the chemical revolution. The slow advances of the previous fifty years had benefited most the Northern 'capitalist' large-scale cereal farms. It was undoubtedly these areas that could take most advantage of new machinery and fertilisers and wheat strains as they came on to the market. It appears however, that the Government intervention efforts of the last 15 years have gone to areas other than the North: where indeed they were of most value. SAFER activity has been most active South of the Loire and of relatively little importance in the North, (see Fig. 2.5).

Fig. 3.5 SAFER Activity 1970

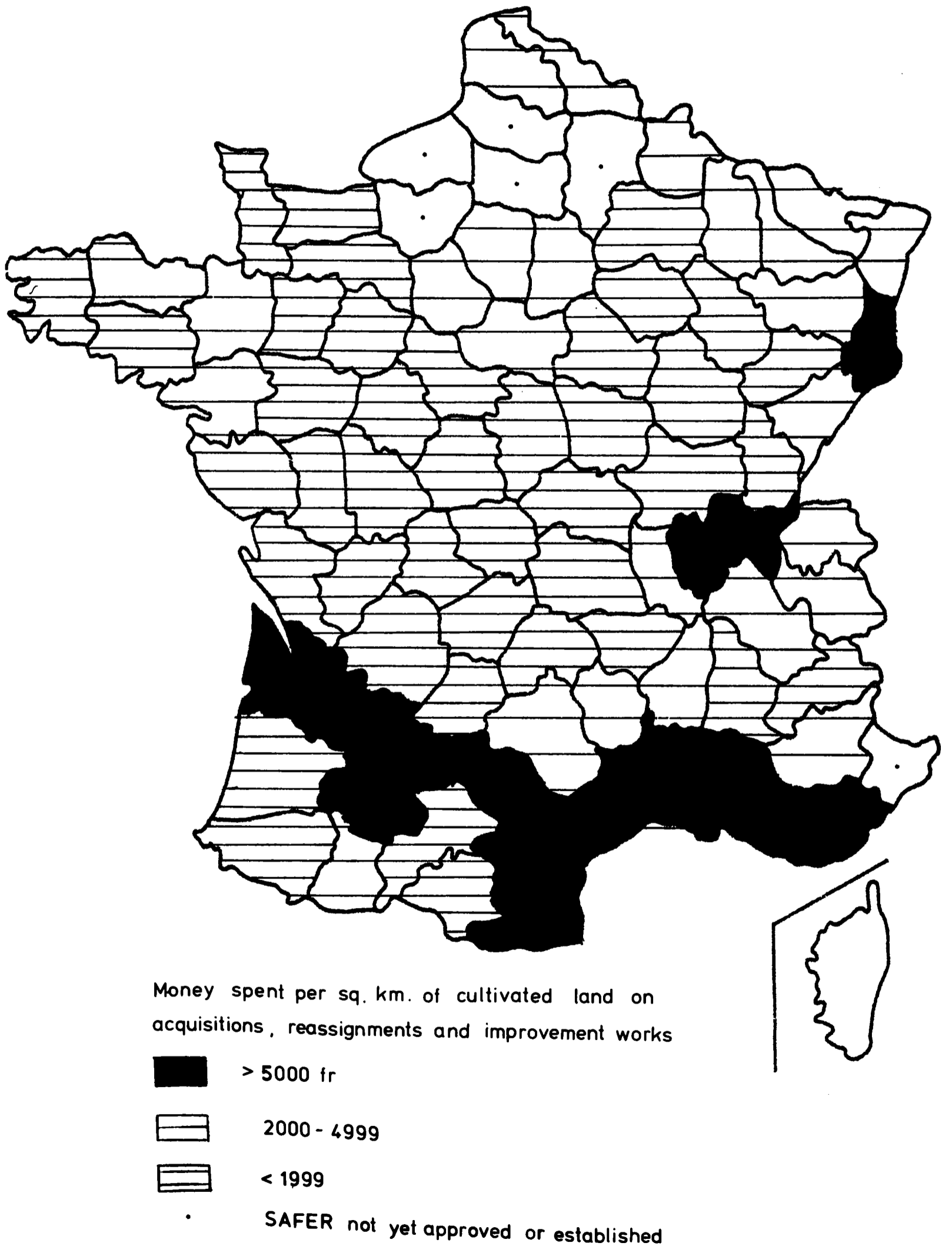
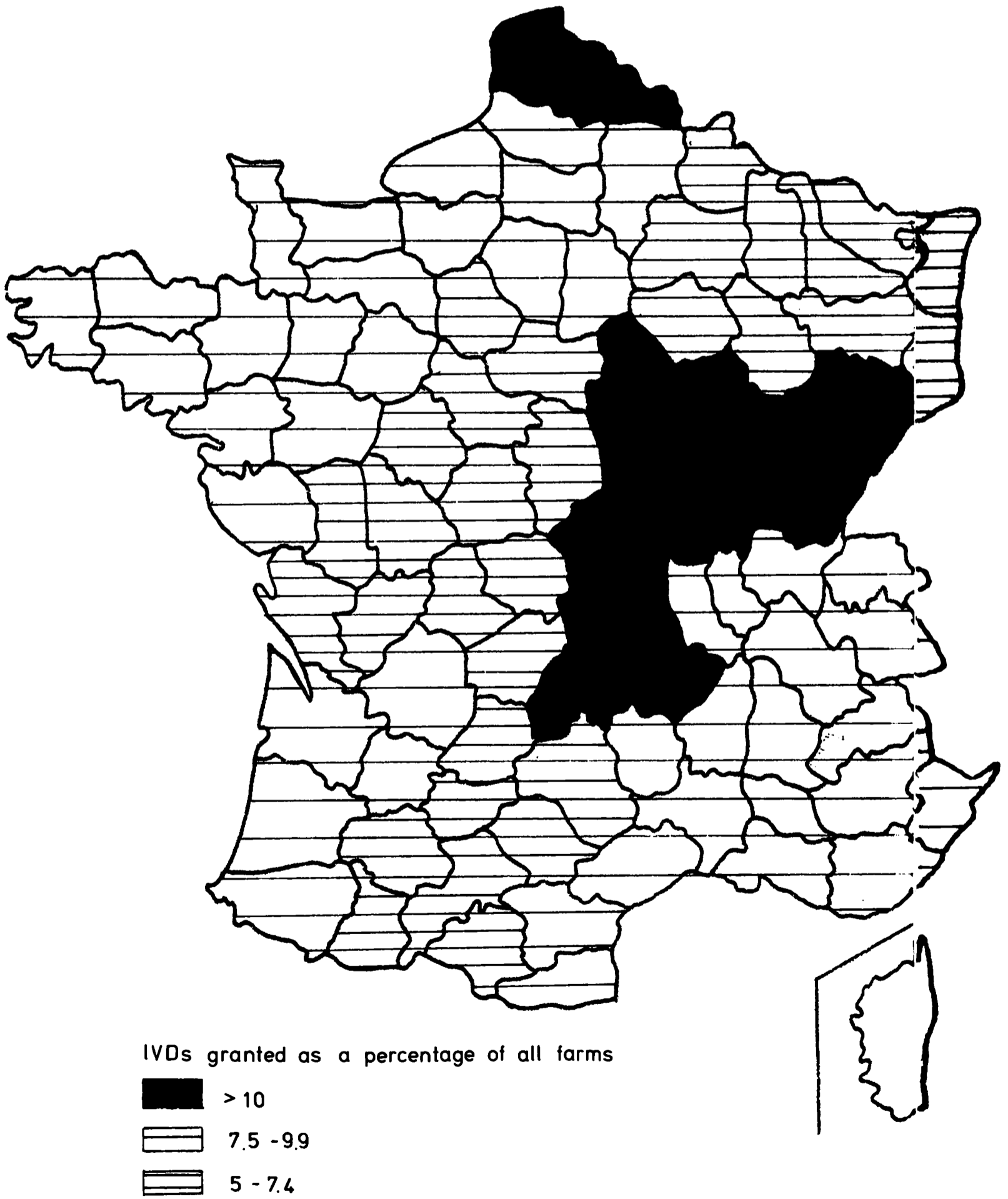


Fig. 3.6 IVDs 1972 -74



IVD's have been relatively most numerous in the East and centre of France, and many thousands of small farmers have benefited from early retirement and restructuring of holdings. IVD's have been relatively under-utilised in the Alpine areas, a feature which is partially disguised by the regional scale (see Fig.3.6). However, the bulk of recent improvements have occurred in areas of greatest need, and may perhaps begin to reduce the regional disparities that had been widening since 1892: indeed Pautard's analysis shows that the era of greatest regional disparities occurred about 1948 (Table 3.2), and that since that time regional variations in productivity and yield have lessened.

### 3.3 AGRICULTURE AND MIGRATION

The outline of the changing trends in agriculture from 1892 to the present day has identified wide disparities in agricultural structure and progress between different regions of France; in particular the difference between the commercially-orientated cereal growing of the North, and the peasant polyculture of much of the rest of France. However, this distinction between 'grande' and 'petite culture' is too vague and too general for any useful discussion of the effects of regional agricultural variations on migration rates and habits.

It can be assumed that areas of very different agricultural character will have differential resources and labour requirements. Areas of poor subsistence agriculture may not have the means to support excess labour, particularly if the birth-rate is high; and as the opportunities and means of emigration increase, so the population may leave. On the other hand some agricultural areas require greater labour inputs and may retain, or even attract population. The balance of labour availability and labour requirements may be tipped by the adoption of agricultural innovations or machinery.

The poorer areas of 'petite culture' had for many previous years experienced temporary migrations to supplement family budgets, leaving mostly during the winter when work was at a low ebb on the farm. The

seasonal exodus became part of the annual rhythm, with men working as hawkers, peddlers or offering services such as construction or chimney sweeping, and in the summer as seasonal 'moissonneurs'. As the new roads permitted travel further afield, so temporary migrations became permanent and areas depopulated. By 1889 most temporary migration was over, to disappear completely by 1914. From the 1880's and 1890's permanent emigration was the response to surplus labour availability.

The first step in the examination of this relationship between agriculture and emigration is the need to determine the importance of regional disparities in agriculture, and by the examination of relationships and differences in agricultural variables to formulate 'agricultural regions' over the period 1892-1970 against which to view variations in out-migration.

### 3.3(a) The Agricultural Data Base

The developments in the recording and compilation of French agricultural statistics are considered elsewhere (Introduction 1.4). The choice of agricultural variables is made from the Agricultural Censuses of 1892, 1929, 1955 and 1970. The two guiding principles in their selection were comprehensiveness and comparability: comprehensiveness in the sense of covering adequately both basic farm structure and the adoption of machinery and improvements, while comparability over at least one time-period was considered essential.

The data utilised thus comprises three sets of statistics for each census date; basic farm structure, agricultural machinery, and agricultural improvements. The data on farm structure is consistently available for all time-periods, and for all départements\*. It comprises seven variables, the first of which, farm size, is considered to be the most significant of all individual parameters (Zeldin), but in fact disguises a multitude of farming concepts only distinguishable in relation to the other characteristics. Four of these variables relate directly to the type of specialisation: crops, comprising cereals, market gardens and vineyards, and a generalised livestock variable<sup>1</sup>. These are supplemented by direct measures of intensity of working: percentage of the working population employed in agriculture, and the number of workers employed per 100 hectares of cultivated land. Together this group of variables define the type of agriculture and intensity of working, differentiating between types of specialisation, and also between the characteristics of peasant economy and capitalist commercial farming.

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\*Except for Ville de Paris in 1970, deemed to be all urban, with no agricultural statistics available.

<sup>1</sup>Uses 'livestock equivalents', based on units of labour and fodder required. 1 cow = 1 unit, 1 horse = 1 unit, 5 sheep, goats = 1 unit, 2 pigs = 1 unit.

(Coppock, Morgan & Munton)

Agricultural improvements are drawn from the census, the most valuable series being those of applications of fertilisers 1929-1970. However, there is also a very useful series of 'améliorations foncières' available for 1892 and 1929. The data on agricultural machinery is the most variable over time, as old machinery becomes obsolescent and new machinery appears, so the data is classified in different ways. The most useful series seems to be that recording numbers of tractors 1929-1970. The variables used, and the dates of their availability are shown in Table 3.7.

The means and coefficients of variation of the agricultural variables emphasise not only the changing structure of agriculture 1892 - 1970 but also the pattern of regional disparities over time (Table 3.7b). The structural variables show that the period of smallest regional disparities was 1892. In some cases this may be explained by larger numbers, being spread over a wider area. For example, in 1892 on average each département had over 40% of its population employed in agriculture, with very little deviation from this mean. However, the proportion employed in agriculture declines steadily over time, and as it does so, the regional differentiation increases. This is not the pattern for all variables. In 1892 there were relatively fewer livestock and market gardens than in later years. The wider dispersion may be explained by the continuation of regionally self-

Table 3.7 Agricultural Variables 1892-1970

	1892	1929	1955	1970
<u>Agricultural Structure:</u>				
% working population employed in agriculture	✓	✓	✓	✓
mean size of farms	✓	✓	✓	✓
no. workers per 100 hectares cultivated land	✓	✓	✓	✓
cereals as % of agricultural land	✓	✓	✓	✓
vineyards " " "	✓	✓	✓	✓
market gardens " "	✓	✓	✓	✓
livestock equivalents per 100 ha of agricultural land	✓	✓	✓	✓
<u>Agricultural Improvements</u>				
Land clearance per 1000 ha of agricultural land	✓	✓		
Woods clearance " " "	✓	✓		
Reafforestation " " "	✓	✓		
Drainage " " "	✓	✓		
Marsh clearance " " "	✓	✓		
Irrigation of arable land " "	✓	✓		
Irrigation of pasture " "	✓	✓		
Irrigation of market gardens "	✓	✓		
Nitrogenous fertiliser (tonnes) per 100 ha of agricultural land		✓	✓	✓
Phosphates " "		✓	✓	✓
Potassium " "		✓	✓	✓
% communes with electricity		✓	✓	✓
<u>Agricultural Machinery</u>				
Ploughs (all per 100 ha agricultural land)	✓	✓		
Mowing machines	✓	✓		
Rakes and tedders	✓	✓		
Steam engines	✓	✓		
Water wheels	✓	✓		
Wind mills	✓	✓		
Mechanical seeders	✓	✓	✓	
Fertiliser spreaders	✓	✓	✓	
Binders	✓	✓	✓	
Tractors		✓	✓	✓
Cultivators			✓	✓
Balers			✓	✓
Combine Harvesters			✓	✓

**Table 3.7b Agricultural Variables 1892-1970:**  
Mean Values and Coefficients of Variation

	1892		1929		1955		1970	
		c.v.		c.v.		c.v.		c.v.
<b><u>Agricultural Structure:</u></b>								
Agricultural Employment %	41.67	29.3	35.65	37.5	27.63	41.6	14.9	57.1
Mean size of farms	8.65	31.9	11.64	55.1	14.11	57.4	20.8	53.7
Workers per 100 ha	14.9	47.0	17.88	45.5	14.0	73.1	9.38	112.7
Cereals	33.5	32.1	25.03	49.6	23.6	57.3	27.3	63.4
Vines	4.1	150.5	3.35	182.1	4.14	177.2	4.8	215.5
Market Gardens	0.2	240.0	0.18	302.9	1.38	254.6	2.5	299.6
Livestock Equivalents	56.7	36.9	57.15	48.4	69.92	54.7	79.6	56.5
<b><u>Agricultural Improvements</u></b>								
Land clearance	2.95	141.5	2.01	147.4				
Woods clearance	1.09	99.1	0.46	200.0				
Reafforestation	2.60	221.7	5.01	231.3				
Drainage	2.18	177.4	2.25	239.1				
Marsh clearance	0.23	157.7	0.23	187.5				
Irrigation of arable	0.79	285.0	0.51	566.7				
Irrigation of pasture	1.86	104.6	0.52	210.1				
Irrigation of market gardens	0.13	305.6	0.15	508.6				
Nitrogenous fertiliser			0.35	221.9	0.62	192.6	3.8	77.0
Phosphates			0.96	55.4	1.14	74.6	5.1	60.2
Potassium			0.49	229.5	0.65	96.9	4.1	75.0
Rural electricity			0.42	98.9	1.71	44.6	62.0*	27.0
<b><u>Agricultural Machinery</u></b>								
Ploughs	0.45	146.7	0.45*	135.6				
Mowers	0.12	133.3	3.13	60.4				
Rakes & Tedders	0.12	125.0	2.46	75.2				
Steam Engines	0.03	88.5	0.05	73.5				
Water wheels	0.03	69.2	0.02	76.2				
Wind mills	0.01	178.6	0.006	133.0				
Mechanical seeders	0.12	216.7	0.73	169.9	1.25	134.0		
Fertiliser spreaders	0.01	241.7	0.27	203.7	0.67	152.2		
Binders	0.05	140.0	0.95	126.3	1.59	90.5		
Tractors			0.06	93.3	1.08	50.0	9.83	76.8
Cultivators					0.17	99.3	2.21	77.4
Balers					0.08	115.2	2.19	63.5
Combine Harvesters					0.06	150.0	2.48	92.7

\*Slight change definition

lowest coeff. var.

$$C.V. = \frac{100}{\bar{x}}$$

sufficient agriculture to a relatively late date, even after trade barriers had been broken. Similarly in 1892 the average farm size was grouped closely around 8 - 9 ha, but as the size of farm increases to over 20 ha, so does the variation in farm size from region to region. In this development can be seen the adaptation of farm structures to the most suitable type of agriculture for the environment in which it is to be practised: this development, despite the efforts of the SAFER's and CNASEA. The exception of this pattern is the intensity of labour (workers per 100 ha. of arable land) which is most widely dispersed in 1929, when relatively more agricultural labour was available because of economic depression (INED).

A similar phenomenon is evident for the 'améliorations foncières' of the period 1892-1929. In almost every case the regional variation is minimised when the average occurrence of any given farming practice is at its peak. The improvements are all highly variable in their distribution (with nearly all coefficients of variation over 190), and become more variable by 1929, as only limited areas were either in need of, or able to, carry out improvements. Thus widespread improvements of 1882-92 decline during the years of reconstruction 1919-1929, and in so doing contract from specific areas. Conversely, as other improvements diffuse throughout the countryside

(notably the use of chemical fertilisers) their regional variation in usage declines with time. Thus from 1929 - 1970 the adoption of two notable innovations - chemical fertilisers and electricity - has led to their widespread diffusion throughout France. The exception to this is the early adoption of phosphates, which as discussed earlier, were rapidly adopted by farmers in the pre-war period for their rapid and spectacular results, but have since declined in relation to other fertilisers, becoming confined to the regions where they are most useful.

The adoption of agricultural machinery exhibits similar characteristics. As it becomes more intensively used, so the regional variation in adoption diminishes. Thus water wheels have already reached (indeed passed) their peak distribution by 1892; ploughs, mowers, rakes and tedders, steam engines and windmills by 1929. It is reasonable to assume that in later years, as their usage becomes superseded by other machinery, so the regional variation again increases. Unfortunately as machines become obsolete they are no longer recorded in the agricultural census: binders are replaced by combine harvesters, rakes and tedders by mechanical balers.

The exception to this rule is the adoption of tractors which were very widely diffused by 1955 and rather less evenly spread by 1970. The difference between tractors and other machinery arises from their widespread

dissemination, resulting from encouragement in the 1st plan and their rapid post-war production, and acceptance by farmers as a status symbol. Farmers were encouraged by government to buy tractors, and in the poorer areas the gleaming red monsters would most likely remain idle on tiny smallholdings for ten out of twelve months. (Wylie 1974). Indeed their acceptance post-war was so widespread that authors have even talked of 'over-mechanisation' of the poorer regions in France (Pautard). By 1970, however, the distribution of tractors was more regionally varied; with greater numbers (particularly of powerful tractors) in the commercial farming areas of the wider Paris Basin, where they could be most adequately used.

There is thus evidence of increasing regional differentiation in the basic structure of farming over time, differentiation being widest where overall productivity is low. Areal variation in improvements and machinery is at its maximum in the phases of innovation adoption and of obsolescence. The widening disparities between farming areas 1892 - 1955 are attributable to the widening of relative advantage in a period of economic depression: these disparities have not been reconciled (but on the other hand have not increased excessively) in the boom years of the sixties. Rather, agricultural structure has as in England, become better adapted to the environmental conditions of the areas

where it is practised. It is with this background of regional variation in agriculture that agricultural areas may be delimited.

### 3.3(b) The delimitation of Agricultural Areas

The delimitation of agricultural areas and regions has occupied geographers for many years, and methods of classification have become progressively more sophisticated as geographical statistical techniques develop. Found (1971) has defined a land-use region as 'a spatially contiguous grouping of areal units which exhibits a degree of uniformity in land-use type and/or intensity' (p.83). In this case a spatially contiguous grouping is not considered necessary as regions are not being delimited for their own sake, but for their labour requirements. The classification procedure adopted here is devised for the particular problem, and is not a 'general' classification. Its purpose is to delimit a limited number of areas, exhibiting major differences in their agricultural specialisations (production functions related to their resource base in Found's terms), which therefore have different labour requirements. The concept of standard man-days in this classification has not been used because of its inapplicability over such a long time-period. Some of these agricultural areas will be the subject of general agreement, particularly the Northern commercial farming area, others will

perforce be more arbitrary. However, no 'natural' classification exists i.e. in the sense that the data suggest incontrovertibly their own general classification (Harvey 1969 p.331); therefore the areas will in some cases comprise marginal cases. Two major guiding principles have been employed in this classification: that the method of classification should remain constant for each time-period, and that the areas defined should exhibit greater differences between groups than the differences within groups.

The method of classification selected has rejected the more sophisticated statistical techniques. It has now become commonplace to use multivariate classificatory techniques, particularly cluster analysis, and factor analysis and its variants. Cluster analysis is inappropriate for this purpose as areas are clustered without indicating the basis for grouping, which is an essential requirement for assessment of labour needs. Furthermore this method of grouping offers many potential cut-off points, each producing different areal classifications. Factor analysis or Principal Components Analysis both indicate the correlations on which the grouping is based (by factor or component loadings); but are unsuitable because mutually exclusive areal groupings are generally not produced.

In this case a simple method is employed. It has

been noted from the history of French agriculture which has been traced, that the essential difference in agricultural terms lies between the commercial arable cereal farms and the subsistence 'peasant economy' holdings with a greater variety of crops and livestock. The interplay between these two basic characteristics of agriculture - cereals and livestock - has been used as the basis for classification. Simple cartesian graphs of the two variables were constructed for each time period. When the two variables for each department are plotted against each other and the mean values inserted, a fourfold division emerges: Fig. 3.7 shows this in diagrammatic form:

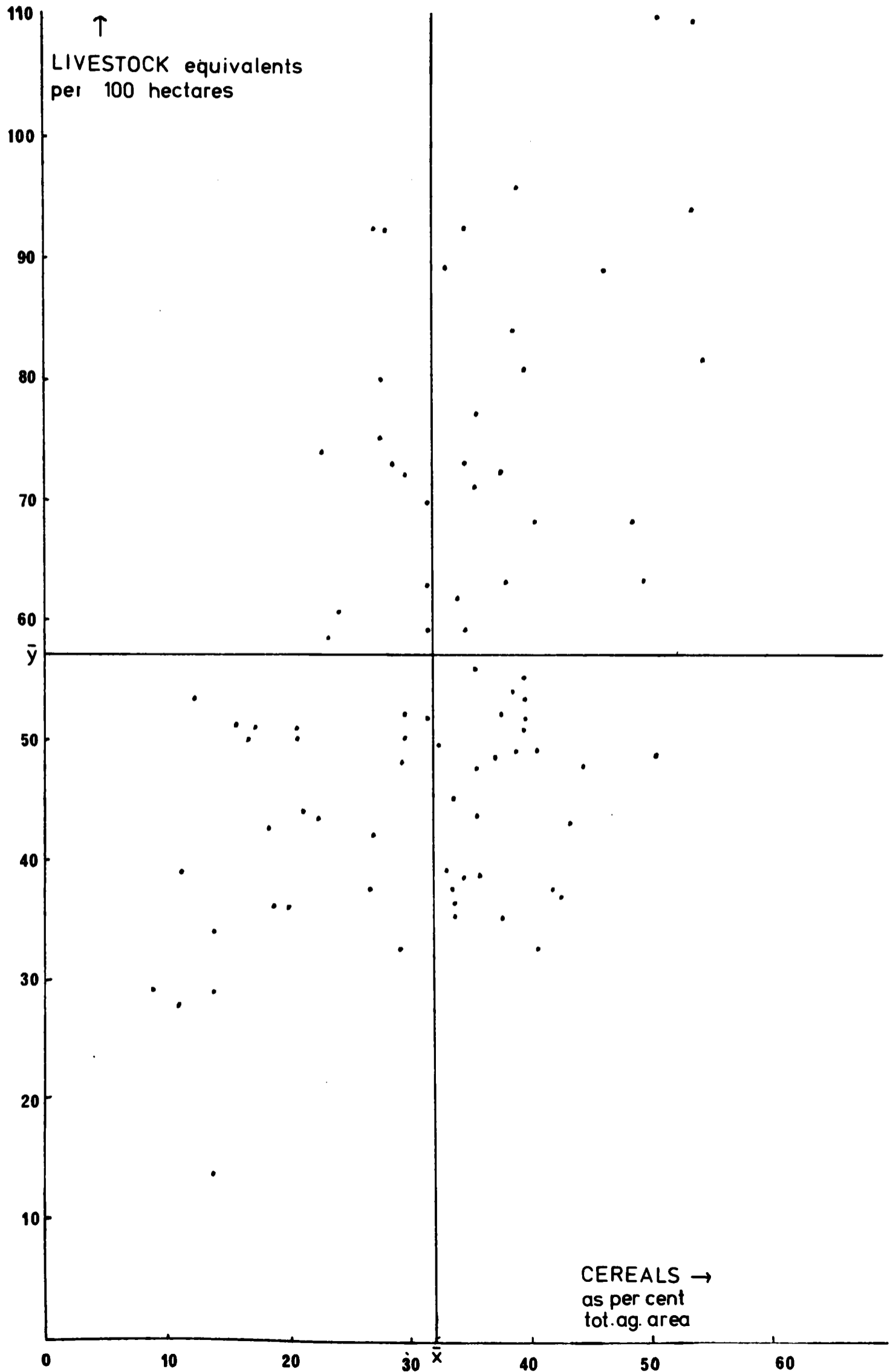
Fig. 3.7 Method of classification of Farming Areas

Livestock Equivalents  
per 100 hectares

High	2	4
mean value Low	3	1
	Low	High
	mean value	Cereals as % of total cultivated land

The classification on this basis is shown for 1892 in Fig. 3.8. The basis of the division is best illustrated by reference to the areas of 1892. Thus areas in group 1 are characterised by a high proportion of cereals and low

Fig. 3.8 Agricultural typology 1892



concentrations of livestock, and are the commercial cereal growing areas of the Paris Basin and Centre, together with the Garonne Valley and Vaucluse.

Group 2 consists of the livestock areas which are confined to upland cattle-rearing areas; parts of the Massif Central, the Pyrenees and Normandy.

In group 3 the areas with low scores on both cereals and livestock may be characterised as areas of subsistence polyculture, where the terrain or the techniques employed support only a low level of agriculture. These départements are the highland départements of the Jura and Alps, the poor soil areas of the Orne and Nièvre (the Morvan) and the Landes. The low scores also encompass the coasts of Languedoc and Provence.

The areas of group 4 which support both a high proportion of cereals and a high concentration of livestock are areas of intensive polyculture, confined to the West coast from the Nord to the Vendée, encompassing all Brittany and the Loire Valley. Other départements include the Tarn, Loiret, and three départements of the Northern Massif Central.

In order to further understand these basic divisions, the correlations between all the agricultural variables in 1892 are examined. These are presented in Figure 3.9. It is immediately clear that there is a

Fig. 3.9. Correlation matrix: Agriculture 1892

	12	15	18	19	21	20	22	32	33	34	35	36	37	38	39	23	26	27	29	30	31	24	25	28	
Agric. employment	12	+				-		+					-		-	-	-	-					-	-	-
Mean size of farm	15		-		-	-	-					+													
Agric. workers	18					+	+	+	+				+						-	-					-
Cereals	19					-		+					-		-				+	+	+		+		+
Vines	21							?					+		+								-		
Market gardens	20									+			+		+										
Livestock	22								+					+					-			+			-
Clearance of land	32												+	+	+				-	-					-
Clearance of wood	33												-						-						-
Reafforestation	34													+											
Drainage	35																+	+	+	+			+	+	
Marsh clearance	36																								
Irrig. of arable	37													+	+										
Irrig. of pasture	38														+				-	-			-	-	-
Irr. of mkt. gdns.	39																								
Ploughs	23																						+	+	+
Mowers	26																						+	+	+
Rakes & Tedders	27																						+	+	+
Steam engines	29																						+	+	+
Water wheels	30																								
Windmills	31																						+		
Mechanical seeders	24																							+	+
Fert. spreaders	25																								+
Binders	28																								

† indicates correlation significant at 1% level

± indicates correlation significant at 5% level

strong positive correlation between cereals and livestock. However, cereals, but not livestock, show positive correlations with machinery, implying advanced techniques and a high level of capital investment. This first correlation points to the dichotomy of the cereal distribution; on the one hand the highly mechanised cereal areas (such as the Paris Basin), on the other hand the areas of polyculture growing cereals and rearing livestock. It is these mixed subsistence/livestock areas which are strongly related to intensity of workers and negatively related to size of farms (5% level). They are thus characterised by relatively small farms, and relatively high inputs of labour rather than capital. There are no positive correlations with machinery, except for obsolescent windmills; and there are only two improvements, one of which - irrigation of pasture - relates solely to livestock areas, and the other - land clearance - is an extensive rather than an intensive improvement. These areas have a high proportion of the labour force employed in agriculture, yet are unrelated or negatively related to most improvements or machines.

Thus there appears a clear distinction between the cereal areas and those areas with a mixture of livestock and cereals. Areas of both market gardening and vineyards are distinct. Vine growing areas are characterised by small farms and irrigation: the same is true of market gardens, and furthermore **these are** intensively worked,

yet in areas of low agricultural employment. This gives, therefore, an indication of an industrialised agriculture, catering for urban needs.

The correlations of the 'améliorations foncières' show that drainage stands out with a row of significant correlations with machinery, associated with the arable areas. Land clearance and clearance of woodland - extensive improvements by increasing the agricultural area - are found in areas with a high labour-force, suggesting population pressure on resources. Irrigation of arable land and market gardens is associated with areas of vineyards and market gardening, also with land clearance: whereas irrigation of pasture is associated with livestock areas, where pasture is generally the major use of cultivated land. The machines are highly correlated to the other mechanical improvements, occurring in cereal areas where drainage is commonplace (see Clout and Phillips who give reasons for this regional pattern) and mechanisation extensive.

The correlations have helped put flesh on the bare bones of the classification. They have not distinguished between the types of polyculture but they have suggested the axes of differentiation; particularly the possibility of urban agriculture, and the incidence of vineyards and market gardens, characterised by small size of farms, and intensity of labour.

Each major agricultural category was then examined with these further characteristics in mind, as each of these characteristics suggests greater requirement for labour. The livestock category showed no anomalies, but the intensive polyculture category had two départements of exceptionally small farms (3 ha cf nat. av. 8.65 ha), with a very high preponderance of market gardening: the ~~urbanised~~-industrial type of agriculture suggested by the correlations. These two départements of Seine and Rhône are also noted for their very low proportion in agricultural employment yet accompanied by high labour intensity; the agriculture obviously influenced by the proximity of the two major cities of Paris and Lyon.

In the subsistence polyculture category with below average proportion of livestock and cereal productivity, the departments of the Mediterranean littoral are distinguished by relatively small farms for that category, and also for their high proportion of the cultivated area taken up by vineyards and market gardens; forming an essentially different type of agriculture from the subsistence farming of the Higher Alps. These formed a labour intensive area of vineyards with a high usage of irrigation and other improvements; a distinctively Southern agriculture. The Southern Agriculture comprised six of seven coastal départements, with the exception of Pyrénées Orientales which has larger farms

and no significant market gardening, although with a substantial proportion of the cultivated area under vineyards.

In the cereals category the disparate Southern départements including the Garonne valley immediately stand out, with smaller farms and more vineyards: however the Loire valley also produced wine, and the Charentes, contiguous with the main group, have even smaller farms. It would appear from the chequered history of the agriculture of the Garonne Valley (Chombart de Lauwe 1946) that its progress to 1892 was slower than that of the Paris Basin; and the structural characteristics may reflect this.

However appearances can be deceptive. It was considered necessary to subject the proposed subdivisions to statistical tests for internal homogeneity. The validity of the subdivisions was tested by Mann-Whitney U tests between the major category and its subdivision, on the basis of the four structural characteristics, vineyards, market gardens, size of farm and intensity of labour. In each case the test implies more vineyards and market gardens, smaller farms, and greater use of labour: a smaller but more labour-intensive type of holding.

The U-test is a non-parametric test designed to test whether differences between the two divisions are

statistically significant. Being a non-parametric test it implies no particular form to the data, which is not expected to conform to the normal distribution. It is, however, 95% power-efficient and is one of the most useful, versatile (and under-utilised) statistical tests (see e.g. Smith 1975). It is preferred to the Student's T-test because of the data assumptions and ease of calculation.

In each case the hypothesis to be tested may be stated thus:

- (a) The size of farm in areas of Southern Agriculture/Urban Agriculture/Cereals and Vines is significantly smaller than for the rest of Subsistence Polyculture/Intensive Polyculture/Cereals category.
- (b) The proportion of cultivated land used for market gardening is significantly greater in areas of Southern Agriculture/Urban Agriculture/Cereals and Vines than for the rest of Subsistence Polyculture/Intensive Polyculture/Cereals.
- (c) The proportion of cultivated land used for vineyards is significantly greater in areas of Southern Agriculture/Urban Agriculture/Cereals and Vines than for the rest of Subsistence Polyculture/Intensive Polyculture/Cereals.

- (d) The intensity of labour per 100 hectares of cultivated land is significantly greater in areas of Southern Agriculture/Urban Agriculture/Cereals and Vines than for the rest of Subsistence Polyculture/Intensive Polyculture/Cereals.

In each case the test is one-tailed, specifying that the difference is smaller in the case of size of farm, but greater in the other three instances.

The results are shown in Table 3.8. In all cases except two, the results are significant, there being only 1 in 1000 chances that the differences could have occurred at random, except in the case of size of farm for Southern/Subsistence Polyculture where the difference is significant only at the 10% level i.e. 1 in 10 chances. The subdivisions are seen to be justified in terms of the major consideration of regionalisation: that differences between groups are greater than differences within groups. The Charentes are included in the 'Cereals and Vines' category as their inclusion reduces the U-values to an even more highly significant level.

Table 3.8 Significance levels for agricultural subdivisions 1892

1892	Size Farms	Market Gardens	Vines	Labour	
Southern/ Subs.Poly	0.10	0.001	0.001	0.001	Level of significance (one-tailed) for U values. N.S. signifies Not significant.
Urban/Intens. Poly	0.001	0.001	N.S.	0.001	
Cereals & Vines/ Cereals	0.001	N.S.	0.001	0.001	

The resulting agricultural regions are shown in Figures 3.10 to 3.13.

The classification procedure has been followed for each succeeding time-period, to delimit areas on a consistent basis, rather than maintaining consistent areas over time. The correlations of agricultural variables in 1929 are first examined to determine any changes in farming characteristics, (Fig. 3.14).

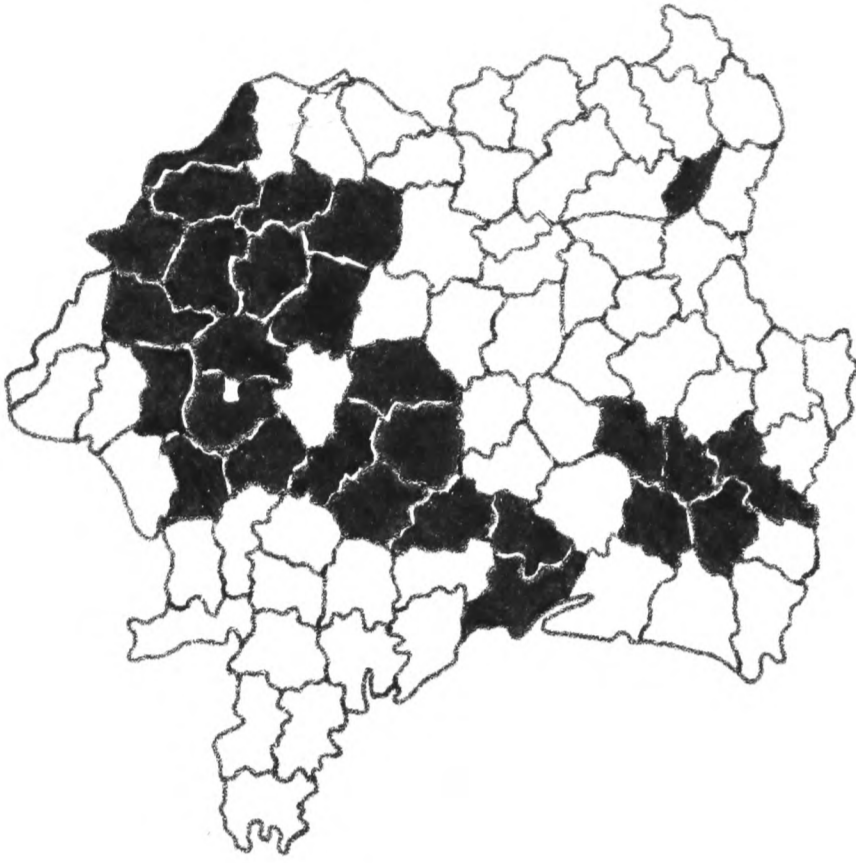
As in 1892 cereals and livestock are positively related, while cereals are related to a wide variety of machinery, and also to other innovations, drainage and the use of fertilisers (nitrates and phosphates). From 1892-1929 there is thus evidence of continuity in advanced cereal agriculture, also showing a definite link with large farms. On the other hand the mixed livestock areas, employing proportionately more of the agricultural labour force, are less advanced. These areas are correlated with mowers, steam engines and mechanical seeders; the mowers and seeders to sow and reap improved grassland for hay; the steam engines for power. The extensive improvement of land clearance is still in operation in these areas, and application of phosphates is significant, in that the more expensive useful and long-term fertilisers - nitrates - are not widely used in the less advanced areas, confirming the earlier indications of extensive phosphate applications. The relative lack of

Figs 3.10 to 3.13 Agricultural areas 1892

10. Subsistence Polyculture



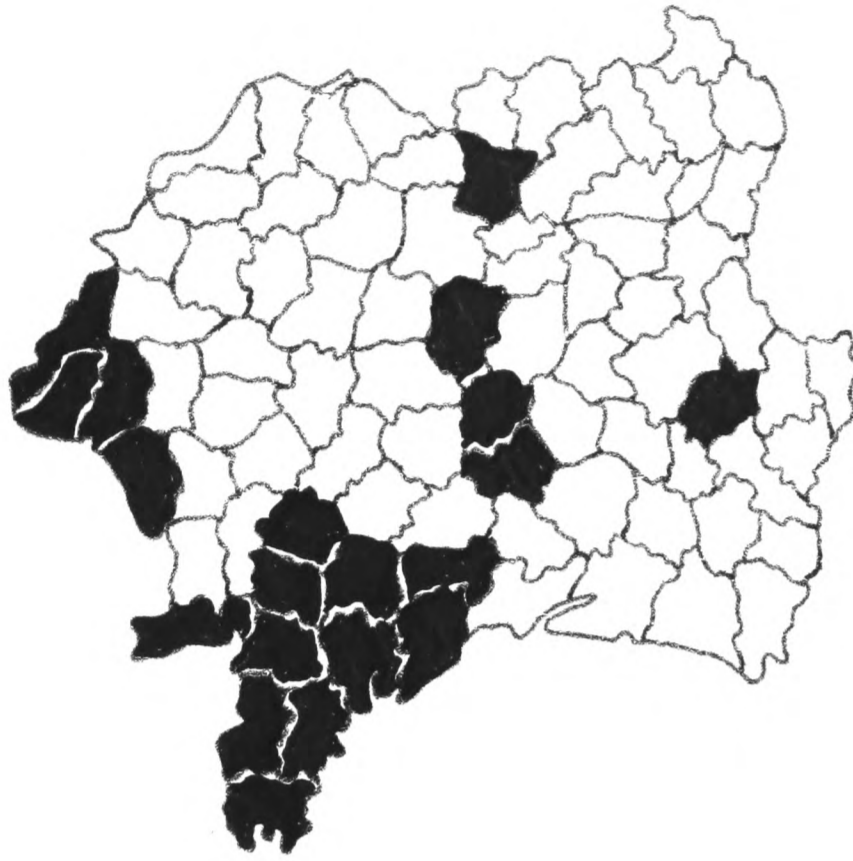
11. Cereals



12. Livestock



13. Intensive Polyculture





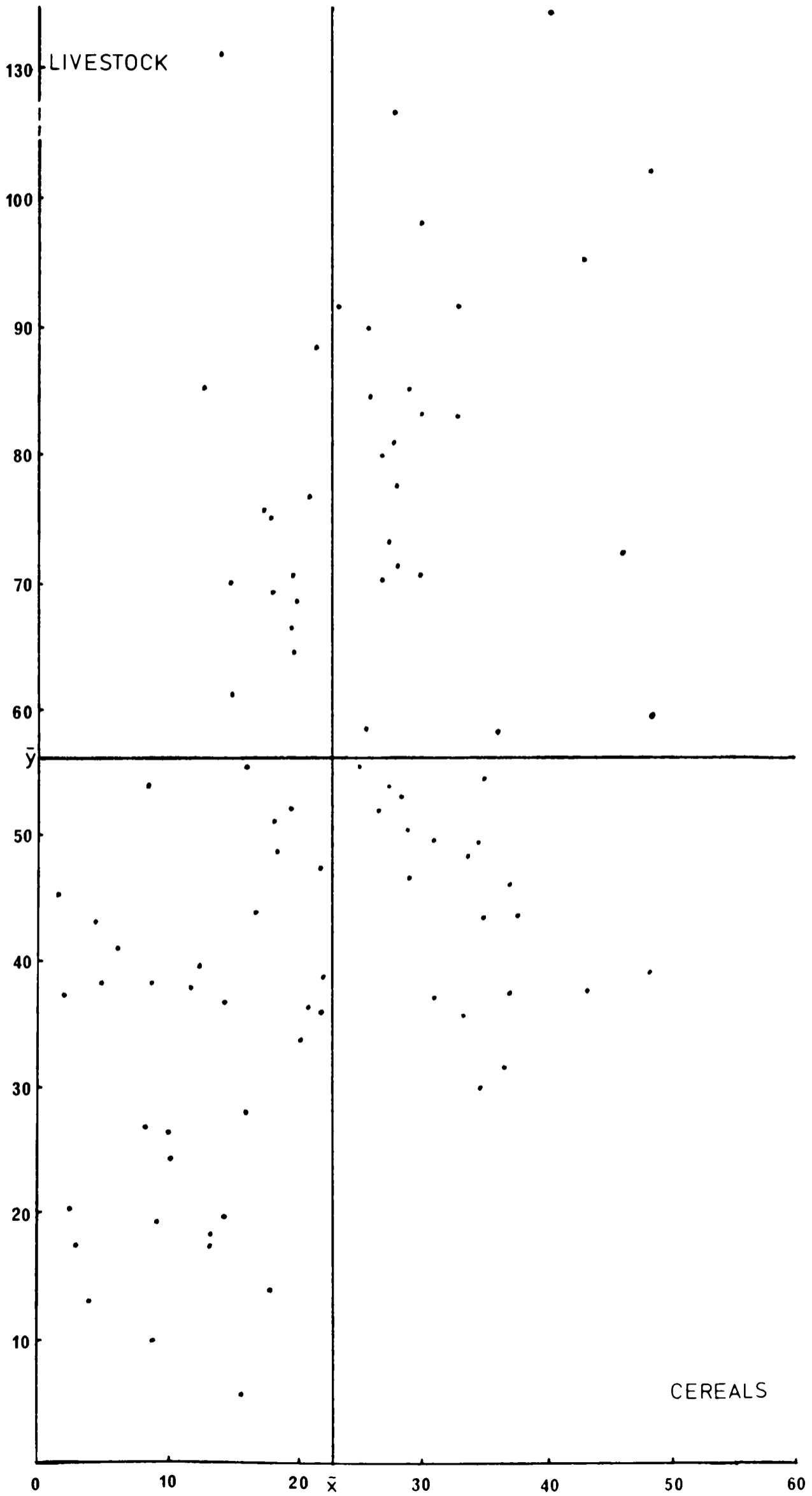
advancement is also seen in the negative correlation with tractors, which are associated with the large cereal farms.

Vineyards and market gardens are again distinct, with high labour inputs although in areas of low agricultural employment. Each specialisation makes use of its own particular machinery. Market gardens also have extensive applications of fertiliser.

The associations between structure and 'améliorations foncières' and machinery remain similar to those of 1892. The new variables included support the general conclusions. Tractors are associated with other machinery and cereal areas, as are fertilisers, except potassium which has relatively few significant correlations. Electrification of rural areas is associated with the least rural areas - where agricultural employment is lowest and where market gardening is prevalent. Thus it is likely that rural electrification occurs in proximity to urban areas.

Thus the basic relationships in agriculture remain constant, although the areas in each category may not necessarily be the same, after the Great War and the depression in agriculture. The four main regions were established for 1929 (Fig. 3.15), with U-tests to establish significant differences between the divisions and their subdivisions. The U-values between cereals and cereals and vines had diminished in significance

Fig 3.15 Agricultural typology 1929



(Table 3.9). However, the significance levels are well above the acceptable threshold of 0.10%.

Table 3.9 Significance levels for agricultural subdivisions 1929 (U-values)

1929	Size Farm	Market Gardens	Vine-yards	Labour
Southern/Subs. Polyculture	0.025	0.001	0.001	0.001
Urban/Intensive Polyculture	0.001	0.001	N.S.	0.001
Cereals & Vines/ Cereals	0.025	0.01	0.001	0.025

The départements in each category have altered slightly (Figs. 3.16 to 3.19). The area of specialist cereal cultivation has diminished, as the national acreage declined over the intervening period. Particularly noticeable in this respect is the reduction in cereals in the Ardennes-Champagne-Lorraine area where five départements revert to 'Subsistence Polyculture' - particularly those areas badly affected by war destruction. Similarly the 'cereals with vines' category has diminished with the exclusion of Vaucluse and Charente.

The livestock category remains numerically constant, but of great importance during this period is the accentuation of livestock breeding in Normandy. Nationally the livestock numbers have declined, so this increase shows an exceptional development in the improvement of the cattle of that area.

Figs 3.16 to 3.19 Agricultural areas 1929

16 . Subsistence Polyculture



17 . Cereals



Figs. 3.16 to 3.19 Agricultural areas 1929

18 . Livestock



19 . Intensive Polyculture



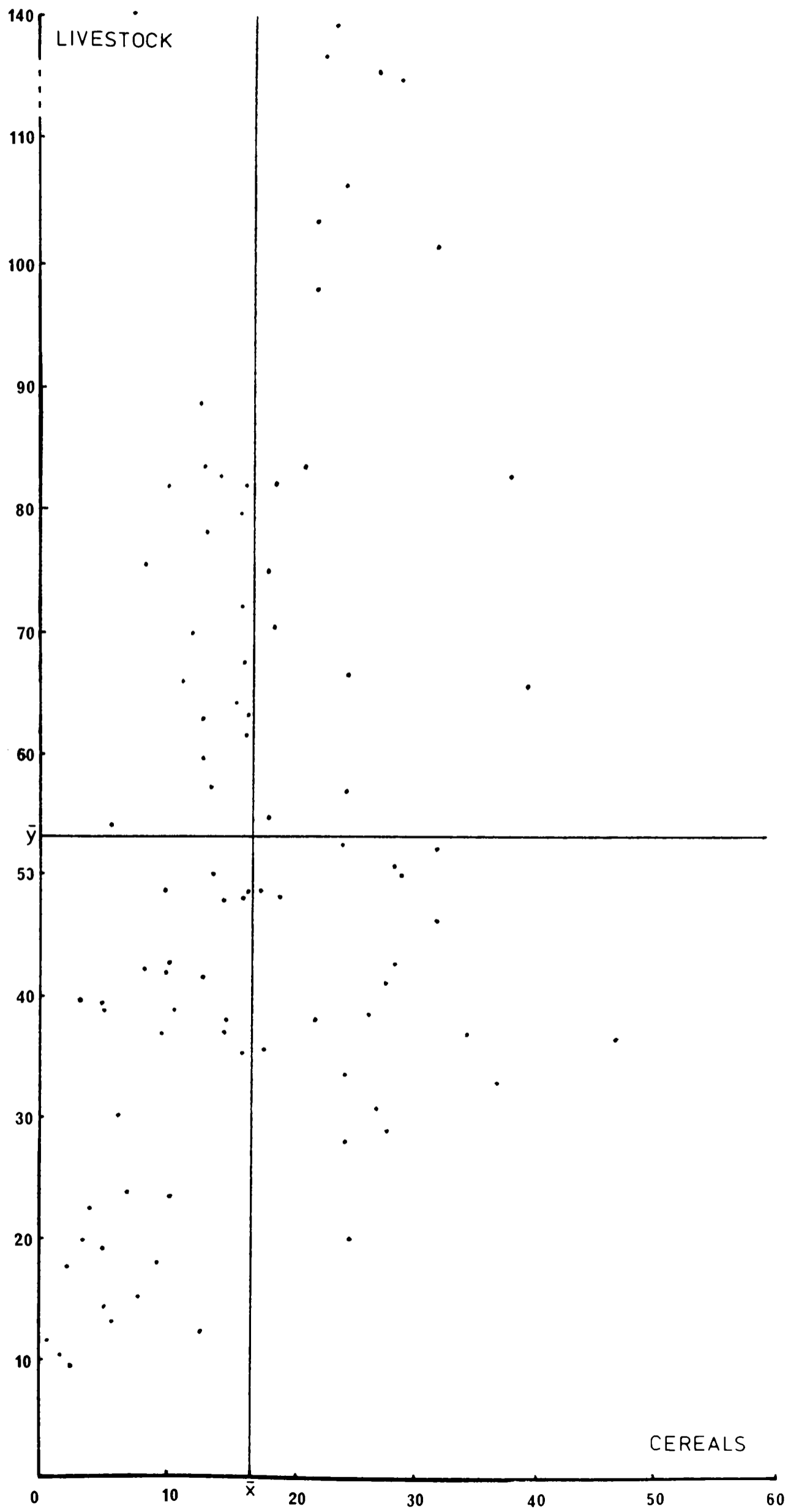
Intensive polyculture extends over a greater area of the Southern Massif Central, while subsistence polyculture extends to encompass one third of the country. This increase is most indicative of the national depression in agriculture. Within this category the Southern agriculture extends to the Vaucluse and Pyrénées Orientales, both having extensively replanted vineyards, and extended market gardens to serve the growing urban areas nearby.

By 1955 it would be expected that some of the effects of the 'Second Agricultural Revolution' would begin to be evident. However, the correlation matrix suggests that the past relationships continue. Advanced cereal agriculture, and less advanced areas of polyculture still persist. Machinery continues to be used mostly in the cereal areas. However, some advancement can be seen in the livestock areas which have become associated with all types of fertiliser and with rural electrification. Market gardening is associated with fertilisers and intensity of labour, but vineyards have no positive correlations with any machinery (except cultivators) or improvements. This tends to suggest that vineyards are becoming a lagging sector in French agriculture.

Therefore the division of agricultural areas into categories is done on the same basis as before. The cereal/livestock division is shown on Fig. 3.21, and



Fig 3.21 Agricultural typology 1955



the significance of the subdivisions in Table 3.10 below.

Table 3.10 Significance levels for agricultural subdivisions 1955 (U-values)

1955	Size Farm	Market Gardens	Vine- yards	Labour
Southern/Subs. Polyculture	0.01	0.001	0.001	0.001
Urban/Intensive Polyculture	0.001	0.05	N.S.	0.001
Cereals & Vines/ Cereals	0.001	0.002*	0.001	0.025

\*The significance of the difference is not in the hypothesised direction. The cereals with vines have less market gardening: the cereal area of the North has greater proximity to markets, now the key factor altering the balance.

The changes of emphasis are reflected in the spatial pattern of agricultural areas (Figs. 3.22 to 3.25). The cereal category has extended to include again two of its départements lost in 1929, and forms a compact region centred around Paris. The cereals and vines subdivision has diminished in size, now consisting of only four départements, the départements of Lot and Charente-Maritime having reverted to subsistence-type agriculture, the regression being particularly marked in the case of Lot. The livestock area has extended from thirteen départements to twenty, the pattern familiar in present-day France emerging, as agriculture becomes more rationalised and suited to the particular environment. The livestock rearing area now includes a large part of the Massif Central and some départements of the Eastern

Figs. 3.22 to 3.25 Agricultural areas 1955

22. Subsistence Polyculture

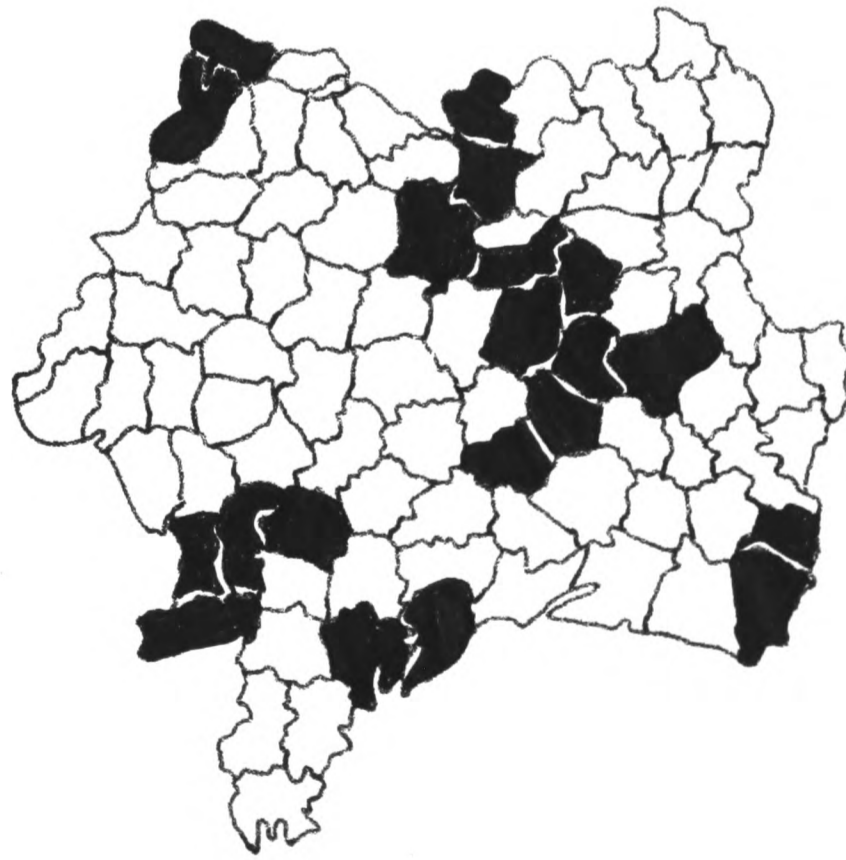


23. Cereals



Figs. 3.22 to 3.25 Agricultural areas 1955

24 . Livestock



25. Intensive Polyculture



mountain fringe, as well as Normandy, the Pyrenees and the Lower Loire. The extension of livestock into the Massif Central has caused a decline in the area of the Intensive Polyculture category, which becomes increasingly confined to Brittany and the Lower Seine-Picardy region.

The subsistence polyculture category remains numerically strong but has diminished on the Eastern coast, while extending into parts of Aquitaine and the Dordogne. The Southern and urban subdivisions remain the same. There is thus a pattern of continued advance in the wider Paris basin, with greater specialisation of livestock in the Eastern upland areas.

The pattern of advance and decline continued to the 1970's. The correlations (Fig.3.26) show that cereals are associated with fertilisers, rural electricity and the most advanced machinery - combine harvesters. Advanced agriculture continued in the Paris Basin. For the first time the association between cereals and livestock is finally broken (which can be seen visually from the graph of the cereal/livestock relationship Fig.3.27). Livestock rearing occurs in areas of high agricultural employment, which are associated with balers (for hay-making as well as straw) and also rural electricity, now much more widespread. Vineyards remain distinct from other specialisations associated

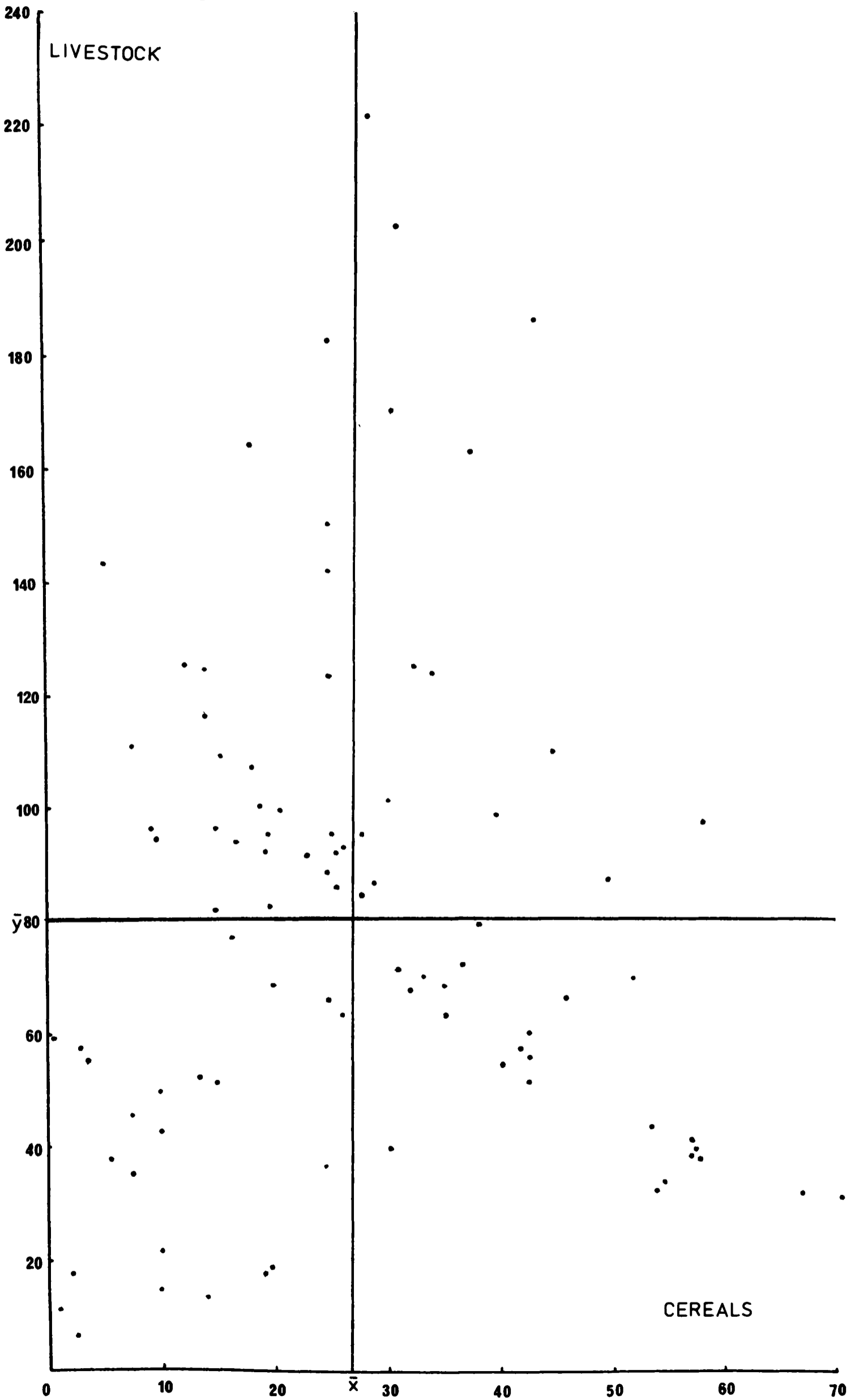
positively only with tractors and cultivators. Market gardens continue to have heavy inputs of labour and fertiliser. The shift of emphasis to separate categories of livestock, cereal, market gardening and vineyards is reflected in the spatial distribution of the different agricultural areas.

The lack of relationship between cereals and livestock is shown in their distinctive distributions (Figs. 3.28 to 3.31). The livestock category has strengthened markedly to include the Massif Central and the Jura, as well as a wider zone of Brittany and the Lower Loire. The cereals category is reduced as marginal départements move into the 'intensive' category. However, the cereals/vines category is greatly extended to include disparate départements from Charente to Drôme and Haut-Rhin.

Intensive polyculture is no longer the exclusive specialisation of the North and West coasts, as more of the upland areas of those regions are used for livestock breeding. Subsistence polyculture is greatly reduced from its peak in 1929 and is confined to the Southern départements of the country. This category contains the two urban départements of Rhone and Hauts-de-Seine, whereas the two other new inner Parisian départements of Seine St. Denis and Essonne are included in the cereals category. These three Parisian départements, together



Fig. 3.27 Agricultural typology 1970

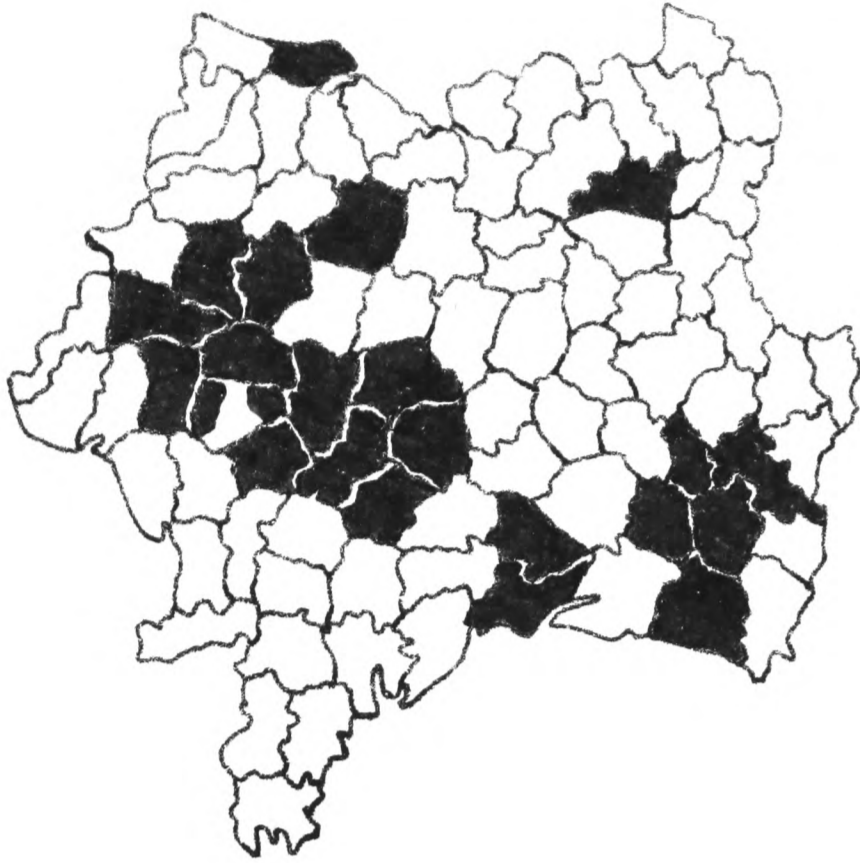


**Figs. 3.28 to 3.31 Agricultural areas 1970**

**28. Subsistence Polyculture**

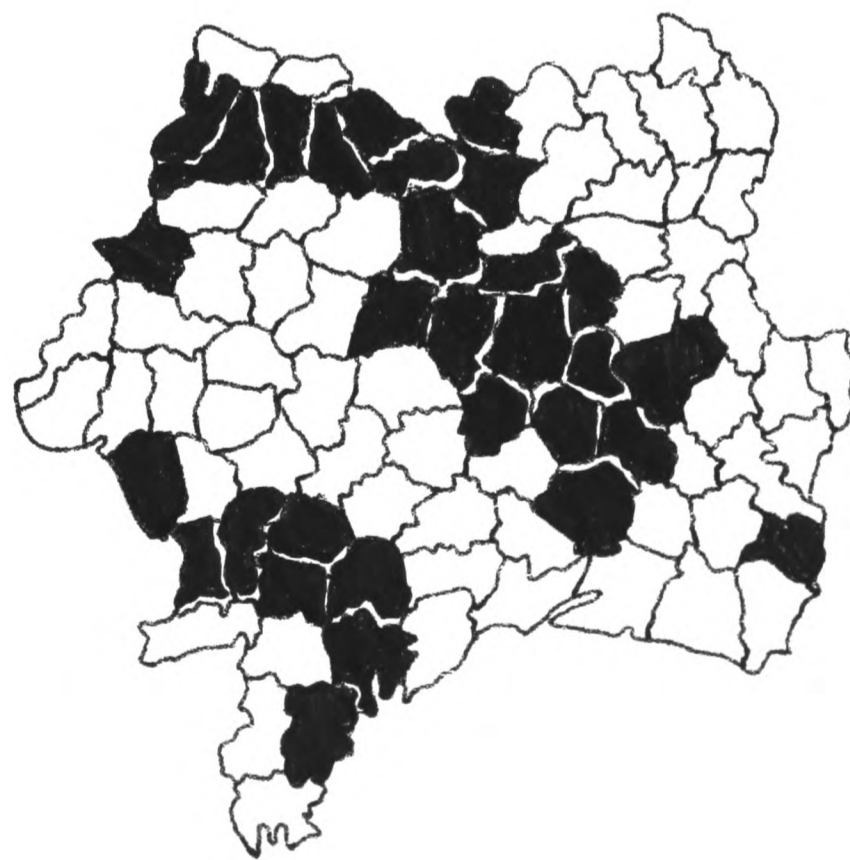


**29. Cereals**



Figs 3. 28 to 3. 31 Agricultural areas 1970

30. Livestock



31. Intensive Polyculture



with the city of Paris and the département of Rhône are considered to be urban, taking into consideration the mean size of farms (9 ha cf 20 nat.av.) and the proportion of market gardening (up to 60% cult.area). The validity of this subdivision is confirmed by U-tests against the combined subsistence/cereal category on these agricultural variables (Table 3.11).

The Southern agriculture category remains almost the same, although Gironde is added as its inclusion makes the U-values more significant, as its vineyards and market gardens are now extensive; with a corresponding fall in farm size from 19 hectares (1955) to 11 ha (1970).

Table 3.11 Significance levels for agricultural subdivisions 1970 (U-values)

1970	Size Farm	Market Gardens	Vineyards	Labour
Southern/Subs. Polyculture	0.001	0.025	0.001	0.001
Urban/Intensive Polyculture	0.001	0.001	N.S.	0.001
Cereals with vines/Cereals	0.001	N.S.	0.001	0.025

The changing pattern of agricultural areas shows up some interesting trends. The most persistent of these has been, firstly the continuation of peasant agriculture, at a low level of productivity, combining cereals and livestock, until 1955; and secondly, the cereal areas have persisted around a consistent core from 1892, being

the most improved and innovative agricultural region of France. The period after the Second World War has shown the most marked improvement to specialised agriculture in every field, whether market gardening or livestock rearing. The Second Agricultural Revolution has had the most profound effect on the spatial pattern of French Agriculture.

### 3.3(c) Agricultural Areas and Emigration

The four major types of agricultural area and their three subdivisions are expected to be strongly associated with different labour requirements. The Urban, Southern, and Cereals with vines categories have been distinguished, at least in part, by their intensity of working which is intimately related to the product specialisations of market gardening and viticulture. Of the major regions, the cereal areas had for many years employed groups of seasonal labourers, particularly at harvest time. The needs for labour in cereal production have in more recent years been reduced by mechanisation. The polyculture categories have a lesser requirement for labour, but have traditionally been strongholds of a peasant mentality, maximising labour input for a relatively low level of production (Mendras 1970). The livestock areas have the lowest labour requirements. Table 3.12 lists the agricultural areas in terms of their labour needs.

Table 3.12 Labour Requirements of Agricultural Areas

Urban	Most labour intensive
Southern	
Cereals with vines	
Cereals	
Intensive polyculture	
Subsistence polyculture	
Livestock	

In view of the varying labour requirements associated with these different agricultural areas it is hypothesised that consequently these areas will be differentially susceptible to migration. The agricultural areas are tested for significant differences in their migration characteristics, using a two-tailed Mann-Whitney U-test. This test is non-parametric and is preferred to the T-test because it is distribution-free, and because of its ease of calculation. Furthermore it is preferred to Analysis of Variance because it was considered more rigorous to test each area against every other, rather than to use a significance test including all categories at once.

Mean rates of rural emigration from each agricultural area for 1892 are shown in Table 3.13. As agricultural structure and thus labour requirements are being used to explain migration rates, emigration from rural areas is used as the dependent variable. If net migration rates

for the whole department are used, these are distorted by in-migration to urban areas, a problem which becomes more serious in later years. However, the use of rural migration data means that the urban agriculture category cannot be used satisfactorily in the analysis: it consists of only two departments, one of which (Seine) has no rural communes. In any case, population movements around those major cities are, at best, tenuously linked to agriculture, and must be explained by industrial, commercial, urban and suburban development.

**Table 3.13** Mean rural migration rates: Agricultural areas 1892

	Cereals	Cereals & Vines	Live-stock	Urban	Inten- sive Poly- culture	Subsis- tence Poly- culture	Southern Agri- culture
n	19	8	12	2	21	18	6
$\bar{x}$	-13.68	-26.36	-30.82	-79.6	-26.67	-35.94	+15.93
s.d.	20.56	18.61	18.69		12.09	24.57	50.13
c.var.	150.29	70.59	60.64		45.33	68.36	314.69
Total mig.	-1.74	-13.41	-21.91	+52.5	-12.02	-20.87	+35.10

n = number of departments

$\bar{x}$  = mean emigration from rural communes expressed as per 1000 change over the inter-censal period

s.d. = standard deviation

c.var. = coefficient of variation

total mig. = net migration rate (per 1000) for urban and rural communes

Comparison of total migration rates with those from rural communes clearly shows that the rate of rural population loss is much greater than average migration change. This is particularly marked in the urban category. Seine and Rhône show a huge overall gain in population but Rhône exhibits marked loss from its rural areas. This pattern of migration is distinctive from all other areas, but the urban destinations are considered in more detail in Chapter 4.

The Southern agricultural area shows a marked increase in total population and a lesser increase in its rural population, (with the exception of the department of Aude which lost 39 per 1000 of its rural population and 41 per 1000 of total population). This migration reflects in-movement to the growing urban areas and tertiary employment of the Mediterranean coast, whereas Aude in 1892 lacked any major city, and had predominantly agricultural employment. The continued attraction of Provence for inter-regional and international migrants from 1892 to 1975 cannot be explained by agriculture but by the Southern economy as a whole.

At the other end of the migration spectrum are the livestock farming areas and departments of subsistence polyculture. Out-migration from those areas is indicative of the difficulty of earning a living on poor upland or mountainous terrain, with inadequate resources, machinery

or even land. The areas where intensive polyculture is practised likewise cannot absorb all the available labour or fully stem the outflow of migrants.

The cereal areas are less extreme in their loss of labour. The cereals with vines departments are distinct areas of outmigration, despite the need for labour in the vineyards. In fact these areas were unimproved, with a poverty of farming environment rather similar to the polyculture areas (Chombart de Lauwe 1946), conducive to outmigration. The major cereal region of Northern France is most successful in retaining its rural labour force, because of greater advancements in agriculture and opportunities for employment.

Table 3.14 presents the results of the U-tests to determine whether these differences in migration rates from the agricultural areas are statistically significant.

Table 3.14 Significance of differences in migration rates from agricultural areas 1892

	Cereals	Cereals with vines	Livestock	Intensive Polyculture	Subsistence Polyculture	Southern Agriculture
Cereals		N.S.	0.02	0.02	0.05	N.S.
Cereals with vines			N.S.	N.S.	N.S.	0.05
Livestock				0.10	N.S.	0.05
Intensive Polyculture					0.05	0.05
Subsistence Polyculture						0.02
Southern Agriculture						

N.S. = not significant  
0.02 significant at the 0.02 level (two-tailed)

As previously indicated, the Southern area is significantly different in migration characteristics from almost every other category, but this cannot be attributed to agriculture. The cereals category with its low out-migration rate is significantly different from every other except cereals with vines, while Intensive Polyculture is significantly different from both livestock and subsistence polyculture.

By 1929 the pattern of agricultural areas had altered; the cereal area had been reduced by war damage and economic depression, and the area of subsistence polyculture had consequently expanded. The migration rates for each area are shown in Table 3.15, and the significance of the migration differences are shown in Table 3.16

Table 3.15 Mean rural migration rates: Agricultural Areas 1929

Agricultural area	Cereals	Cereals with vines	Livestock	Urban	Intensive Polyculture	Subsistence Polyculture	Southern Agriculture
n	14	6	13	2	22	24	8
$\bar{x}$	-20.39	-9.50	-21.86	+64.40	-35.19	-30.94	-6.93
s.d.	25.18	22.41	20.60		23.42	20.98	33.89
c.var.	123.49	235.89	94.24		66.55	67.81	489.03
tot.mig.	+4.52	+13.08	-4.69	+64.40	-18.17	+7.61	+67.53

n = number of departments

$\bar{x}$  = mean emigration from rural communes expressed as per 1000 change over the inter-censal period

s.d. = standard deviation

c.var. = coefficient of variation

total mig. = net migration rate (per 1000) for urban and rural communes

Table 3.16 Significance of differences in rural migration rates from agricultural areas 1929

	Cereals	Cereals with Vines	Livestock	Intensive Polyculture	Subsistence Polyculture	Southern Agriculture
Cereals		N.S.	N.S.	0.002	N.S.	N.S.
Cereals with vines			N.S.	0.02	0.02	N.S.
Livestock				N.S.	N.S.	N.S.
Intensive Polyculture					N.S.	0.10
Subsistence Polyculture						0.10
Southern Agriculture						

As in 1892 the urban areas showed high total in-migration, and high rural in-migration, attributable to suburban expansion. The areas of Southern Agriculture exhibited remarkable variability with rural migration rates ranging from -50% to + 50%. The two categories are not considered further. The other agricultural areas continue to show substantial rural emigration despite marked urban growth in almost all areas.

Least rural emigration occurs from the cereals with vines area, which becomes significantly different from areas of polyculture. The slowing rate of out-migration can be attributed to substantial in-movements

of foreign workers, which also contributed to the relative agricultural advancement of this area in the 1920's and 30's. (Demangeon and Marco 1939 , Chombart de Lauwe 1946). The cereal area of Northern France shows more substantial rural losses than formerly, possibly as a result of the quickening of mechanisation.

The livestock and polyculture areas exhibit heavy losses of rural population. This is particularly marked in the areas of intensive polyculture; despite intensive use of the soil, the difficulties of the environment were such that the land could not support the population. The out-migration from these areas is significantly greater than from the cereal areas. It is symptomatic of the agricultural problems (and of the attractions of urban areas) that even in a time of national depression, the areas of Brittany, the Limousin and the Nord were forced to send migrants out to seek their fortunes elsewhere.

The number of significant differences in migration from agricultural areas lessened over the period 1892-1929. This may be due in part to the increasing variability of migration within areas, but it is also likely that as the agricultural labour force has declined so the influence of agricultural structure on migration was reduced. The pattern of reduced significance levels continues to 1955, suggesting that this is indeed the case.

Table 3.17 Mean rural migration rates: Agricultural Areas 1955

Agric- cultural area	Cereals	Cereals with Vines	Live- stock	Urban	Inten- sive Poly- culture	Subsis- tence Poly- culture	Southern Agri- culture
n	18	4	20	2	15	24	8
$\bar{x}$	-6.43	-6.40	-7.62	-3.4	-8.95	-6.67	+2.79
s.d.	3.74	1.84	3.01		2.29	2.48	6.05
c.var.	58.16	28.75	39.50		25.29	37.18	216.85
tot.mig.	+2.49	1.63	-0.05	+2.25	-2.09	+0.58	+10.34

n = Number of departments

$\bar{x}$  = mean emigration from rural communes expressed as % change over the inter-censal period

s.d. = standard deviation

c.var. = coefficient of variation

total mig. = net migration rate (%) for urban and rural communes

(N.B.) Change in data to % form over an 8-year intercensal period.

Table 3.18 Significance of differences in migration rates from Agricultural areas 1955

	Cereals	Cereals with vines	Livestock	Intensive polyculture	Subsistence Polyculture
Cereals		N.S.	N.S.	0.10	N.S.
Cereals with vines			N.S.	0.10	N.S.
Livestock				N.S.	N.S.
Intensive polyculture					0.10
Subsistence polyculture					

(N.B. Southern agriculture is excluded from this table: its migration characteristics are significantly different from other areas but are not attributable to agriculture)

The out-migration rates and significance levels for 1955 are shown in Tables 3.17 and 3.18 respectively.

In 1955 all areas continued to show substantial rural out-migration (except urban and Southern areas). Apart from Southern agriculture areas, which attract migrants because of the desirability and prosperity of the Mediterranean coast, the only distinctive area of migration is the Intensive Polyculture region, which continues to show substantial out-migration. The other areas show steady rural losses of almost 1% a year; this reinforces the idea that by 1955 the type of agriculture practised was of much less importance than formerly.

The evidence for 1970 supports this view of the declining importance of agriculture. Urban and southern areas continue to attract population although the larger urban areas are showing evidence of decentralisation. The areas of greatest loss continue to be intensive polyculture, and the livestock regions. The livestock area which in 1970 extended over one-third of France showed the greatest loss.

Within the livestock area it is possible to distinguish rearing areas and dairying areas. It would be expected that the dairying specialisation would have a greater need of labour than the breeding and rearing areas. The dairying areas indeed lost marginally less population (average rural migration -4.05 compared to -5.09 for the beef and sheep areas), but this difference is not statistically significant. However, out-migration from the livestock rearing areas by 1970 becomes statistically significantly different from both cereal areas. Thus in 1970 the livestock rearing areas show the greatest emigration although by this date livestock rearing requires more labour than the highly mechanised and industrialised farming of cereals. This may be accounted for by decentralisation into the cereal growing area of the wider Paris basin which has stabilised rural population in that region; and by the lack of opportunities within the environment of the livestock rearing areas.

Table 3.19 Mean rural migration rates: Agricultural Areas 1970

Agri-cultural area	Cereals	Cereals with Vines	Live-stock	Urban	Inten-sive Poly-culture	Subsis-tence Poly-culture	Southern Agri-culture
n	14	9	31	2	15	12	8
$\bar{x}$	-3.03	-2.28	-4.59	+0.6	-4.37	-3.48	+6.34
s.d.	2.55	2.95	2.31		2.37	3.91	5.60
c.var.	84.16	129.39	50.33		54.23	112.36	88.33
tot.mig.	+2.22	+1.26	-0.06	-3.118	+1.02	+2.52	+4.08

n = number of departments

$\bar{x}$  = mean emigration from rural communes expressed as % change over the inter-censal period

s.d. = standard deviation

c.var. = coefficient of variation

total mig. = net migration rate (%) for urban and rural communes

Table 3.20 Significance of differences in migration rates from agricultural areas 1970

	Cereals	Cereals with vines	Livestock	Intensive Polyculture	Subsistence Polyculture
Cereals		N.S.	0.10	N.S.	N.S.
Cereals with vines			0.10	N.S.	N.S.
Livestock				N.S.	N.S.
Intensive polyculture					N.S.
Subsistence polyculture					

Thus the loss of agricultural employment has occurred in varying degree according to the type of agricultural specialisation. The areas suffering least loss have, in general, been the cereal areas of Northern France, while the areas which have been heavily depopulated are the areas of livestock and polyculture. However, it is clear that the factors affecting migration in the Southern and urban areas are not agricultural but of a wider industrial and economic nature. Furthermore, these non-agricultural factors have become of much greater importance since 1892. It is this wider environmental context of migration which is examined in Chapter 4.

Chapter 4. The changing migration context.

- 4.0 The changing migration context: introduction
- 4.1 The demographic context
- 4.2 Responses to population pressure: outmigration or agricultural improvement?
- 4.3 Amenities: Housing, health and education
- 4.4 Summary and conclusion: areas of immigration and outmigration

'On a souligné que les motivations économiques étaient les plus fréquentes: il est donc normal que la situation matérielle soit améliorée.'

Pitié p.119.

## Chapter 4. THE CHANGING MIGRATION CONTEXT

### 4.0 The changing migration context: introduction.

The spatial flows of migrants and the agricultural context of migration between 1891 and 1968 have been considered in the two preceding chapters. This chapter extends the analysis of the context of migration, by considering other factors, particularly demographic and health factors, education, employment and housing. The aim of this chapter is to assess the types of areas migrants travelled to and from and how the migration environment changed over the period 1891 to 1968.

The effective analysis of the socio-economic context of migration is limited by available data. The demographic and employment variables are consistently available through all time-periods, but the health, education and housing variables improve markedly in quality and extent in the years following the Second World War. All statistics are drawn from the relevant censuses of population, with the exception of the health information which is derived from the 'Causes of Death' statistics (see Chapter 1.4). Other statistical and literary sources are drawn on for supplementary information, notably for housing and education in the earlier years. Some amalgamation of data into broad groupings, particularly of employment categories and age divisions, has been necessary to maintain comparability over all time-periods. The exact variables used in the ensuing analysis

are listed in Table 4.1.

Each group of variables relates to a major dimension of the socio-economic environment. The correlations between net<sup>1</sup> migration and each group of variables are examined first, before any assessment of the relative importance of these factors can be made in the final section of this chapter. Full correlation matrices of all socio-economic variables and net migration are contained in Appendix 1.

Table 4.1. Variables used in the migration context analysis

<u>Demographic</u>	<u>1891</u>	<u>1931</u>	<u>1954</u>	<u>1968*</u>
Population Density	✓	✓	✓	✓
% population in rural communes	✓	✓	✓	✓
% population aged 0 - 20 years	✓	✓	✓	✓
% population aged over 65	✓	✓	✓	✓
% population male	✓	✓	✓	✓
Natural growth of population per 1000	✓	✓	✓	✓
<u>Health and Education</u>				
Infant mortality rate per 1000	✓	✓	✓	✓
% deaths caused by Tuberculosis		✓	✓	✓
% deaths caused by Cancer		✓	✓	✓
% deaths caused by Bronchitis/ Pneumonia		✓	✓	✓
% deaths caused by Violence		✓	✓	✓
% deaths caused by Suicide		✓	✓	✓
% population educated above primary level			✓	✓
<u>Housing</u>				
Persons per dwelling:	✓	✓	✓	✓
% houses with bath			✓	✓
% houses with inside w.c.			✓	✓
% houses owned			✓	✓
<u>Employment</u>				
% labour force unemployed	✓	✓	✓	✓
% women employed	✓	✓	✓	✓
% employment in agriculture	✓	✓	✓	✓
% employment in secondary occupations	✓	✓	✓	✓
% employment in tertiary occupations	✓	✓	✓	✓

\*The dates of the agricultural censuses and population censuses do not coincide exactly. The comparable dates for agricultural variables are 1892, 1929, 1955 and 1970.

<sup>1</sup>It was found impossible to use gross migration data because of the need to maintain the same time-periods as used in Chapter 3.

#### 4.1. THE DEMOGRAPHIC CONTEXT

The demographic context of migration is of fundamental importance in the understanding of population movements, for it provides information not only on the important differentials of age and sex (see Chapter 1.2), but on the relationship of migration to population supply (natural growth). The demographic variables utilised form the most complete set of information available; their relationships with net migration are summarised in Table 4.2.

Table 4.2. Correlations between net migration and demographic variables

	1891	1931	1954	1968
Population density	0.28(0.01) <sup>2</sup>	0.16(N.S)	0.14(N.S)	-0.17(N.S)
Rural Population <sup>1</sup>	-0.70(0.01)	-0.68(0.01)	-0.59(0.01)	-0.55(0.01)
Pop'n aged 0-20	-0.23(0.05)	-0.33(0.01)	0.03(N.S)	-0.11(N.S)
Pop'n aged > 65	-0.27(0.01)	-0.27(0.01)	-0.39(0.01)	-0.20(N.S)
Pop'n % male	0.07(N.S)	0.30(0.01)	-0.12(N.S)	0.14(N.S)
Natural growth	-0.23(0.01)	-0.22(0.05)	0.28(0.01)	0.20(N.S)

<sup>1</sup>The distribution of rural population is almost coincident with agricultural employment and is discussed under that heading.

<sup>2</sup>Significance levels      N.S = Not significant.

Population density is used in preference to absolute population size as a measure of 'population mass' to enable the data to be more easily compared between areas. The relationship between migration and population density is significant only in 1891, when population was particularly attracted to departments containing large cities, notably

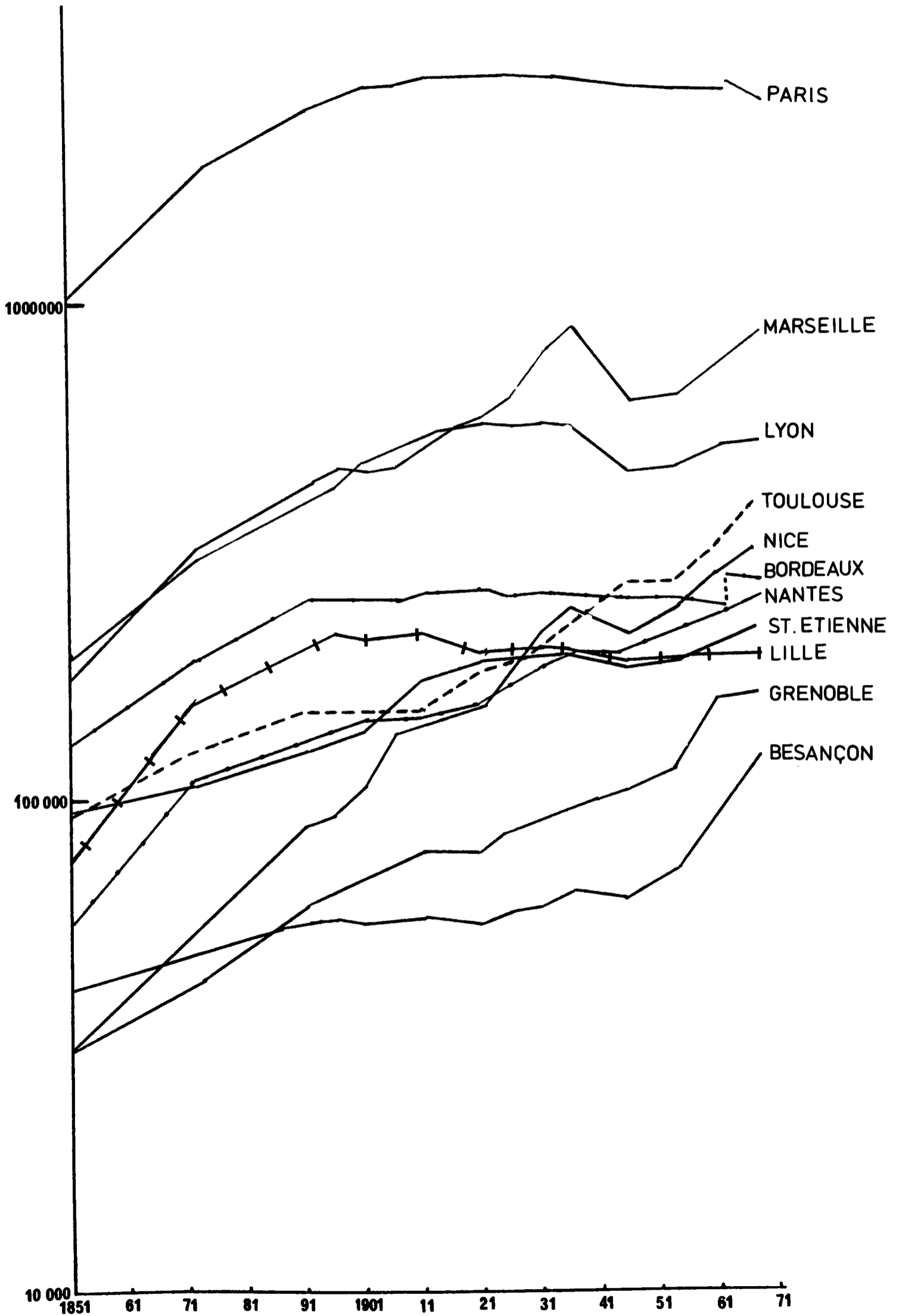
Paris, Lyon, Marseille and Bordeaux (see Chapter 2.2), and when other movements of significance were local interconnected flows. The early growth of these major cities is highlighted in Fig 4.1. Many of the largest towns showed very rapid growth in the late nineteenth century, but the need for in-migrants diminished in the early twentieth century because of the large families prevalent at that time (J.W.House 1977). In contrast are shown the growth patterns of rapidly emerging technological cities such as Toulouse, Besançon and Grenoble. Table 4.3 presents further information on the attraction of population mass.

Table 4.3. Percentage of Departments exhibiting net in-migration, by categories of population size 1891-1968

Population size	1891	1931	1954	1968
0 - 250,000	9	50	26	42
250,001 - 500,000	24	46	56	68
500,001 - 750,000	27	36	64	81
750,001 - 1,000,000	50	100	100	83
>1 m.	100	80	60	40

In 1891 the departments of over 750,000 attracted most population while the smaller departments were much less attractive. In 1931 the relationship has become disrupted for three categories out of five. The largest departments continued to attract migrants, with the exception of Pas-de-Calais which suffered slight net loss. The attraction of the smallest departments may be accounted for

Fig. 4.1 Population growth of French major cities 1851 - 1968



by the movement to Aquitaine, the Midi and the Pyrenees, a movement swollen by foreign workers. Departments in the middle size category, with a population of 500,000 - 750,000, exhibit marked loss, chiefly accounted for by the Limousin and Breton departments.

By 1955 the progression becomes more perfect again with the exception of movement away from the largest departments. By 1970 this is even more marked with a distinct curvilinear relationship between migration and population size, evidence of metropolitan decentralisation and emigration from the older centres of population and industry.

The other demographic variables of age and sex cannot be thought of as migration differentials as such because although migration may correlate with e.g. youthful populations this correlation refers to areas and not necessarily to the people who are moving. Rather they must be viewed as indicators of the demographic context in which migration is occurring. No clear relationship between sex and migration occurs except in 1931 where migration is positively associated with male population, possibly attributable to the extreme economic circumstances of that time.

Elderly populations are negatively associated with immigration, although by 1968 this relationship is no longer significant, possibly because of the increase in retirement

migration particularly to Alpes-Maritimes. However, in the period 1891-1954 in-migrants were rarely elderly, but more significantly, as out-migration occurred so an elderly population was left behind which in turn became a deterrent to in-migration.

There is no clear positive relationship between in-migration and the young age group. It is however clear that areas of immigration have had a preponderance of people of working age, the economically active population, with a higher propensity to migrate; while areas of out-migration have exhibited a higher dependency ratio.

The relationship between migration and natural growth has undergone a significant and persistent trend over this period. Until 1931 there existed a negative relationship, the areas of high natural growth being associated with outmigration, in a type of population pressure<sup>1</sup> phenomenon. However, in the 1930s and '40s the relationship was dramatically reversed; areas of high natural growth became associated with in-migration, whereas outmigration and natural decline became linked as relict areas formed. Natural growth is the key to the original distribution of population and is thus worthy of further study.

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<sup>1</sup>Population pressure is defined here as an area exhibiting high natural growth and out-migration. Relict areas are defined as areas of natural decline and outmigration.

Linear correlation does not adequately describe the complex relationship between natural growth and net migration. Fig. 4.2 emphasises the negative direction but also the three-cornered nature of the relationship in 1891, which is further clarified by Fig. 4.3. There are relatively few areas of in-migration at this time, and only seven of those departments had natural growth (Alpes-Maritime, Seine, Meurthe-et-Moselle, Marne, Loire, Nord, and Belfort (Ht.-Rhin)). In all other cases the receiving areas were still 'consumers of men', which may be explained by the migration of single persons (some of whom moved only seasonally or temporarily), and by poor environmental conditions in the urban reception areas.

Areas of natural growth and out-migration (referred to as areas of population pressure) are Brittany, the Massif Central, and parts of the Alps and Pyrenees. Areas of natural decline and out-migration (referred to as declining or relict areas) consist of parts of Normandy, the Midi (except Haute-Garonne) and the Rhône-Saône corridor. It can be noted that the declining areas have no special farming resources, consisting in the main of subsistence polyculture. In these areas labour is being reduced in two ways - by out-movement and by a fall in fertility. However, this lack of young persons produces a well-known vicious circle, the area lacks innovation and resources and so out-migration continues (Sauvy 1966).

Fig. 4.2 Natural growth and migration 1891

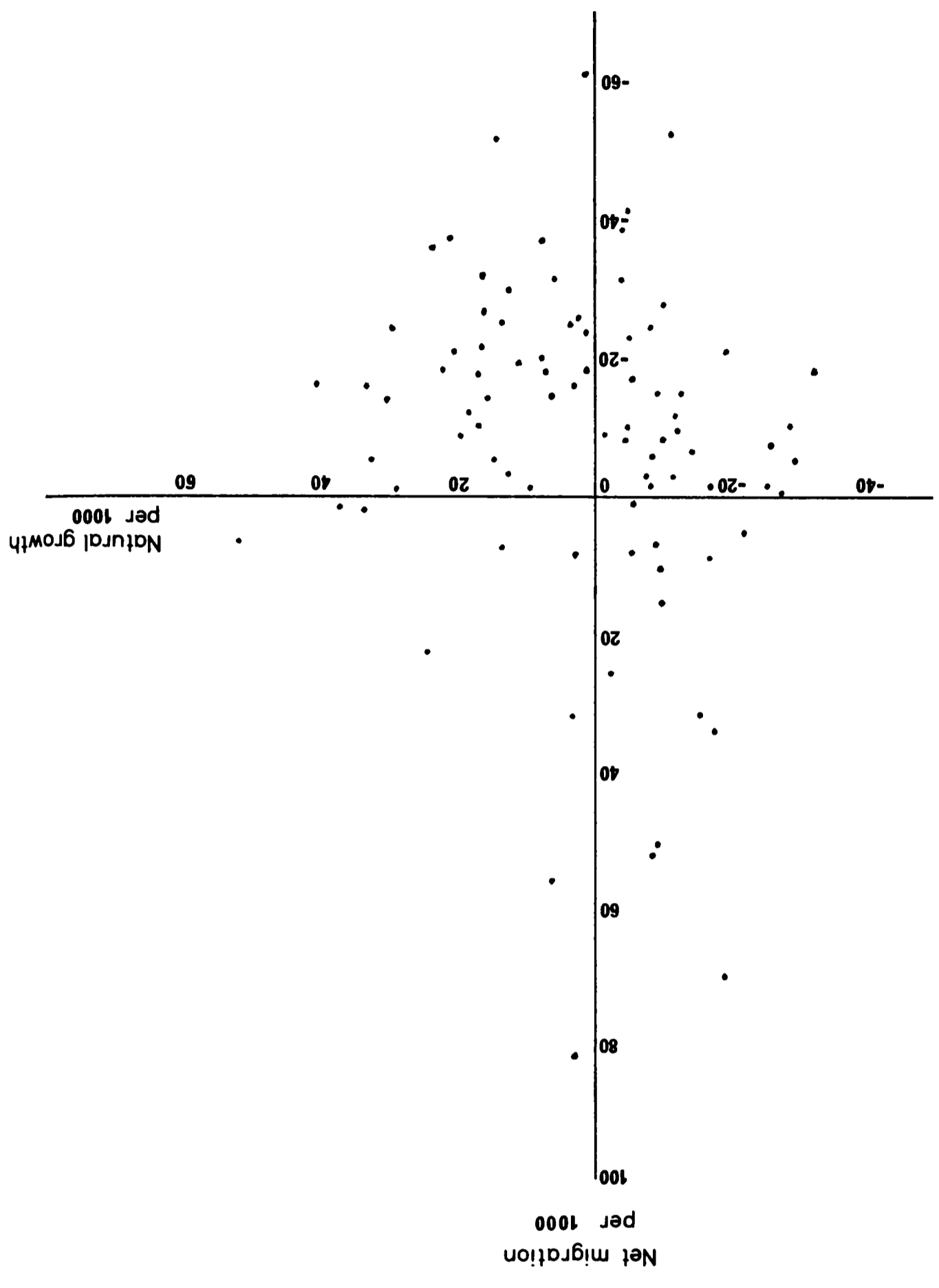


Fig 4.3 Demographic areas 1891

a. Natural growth

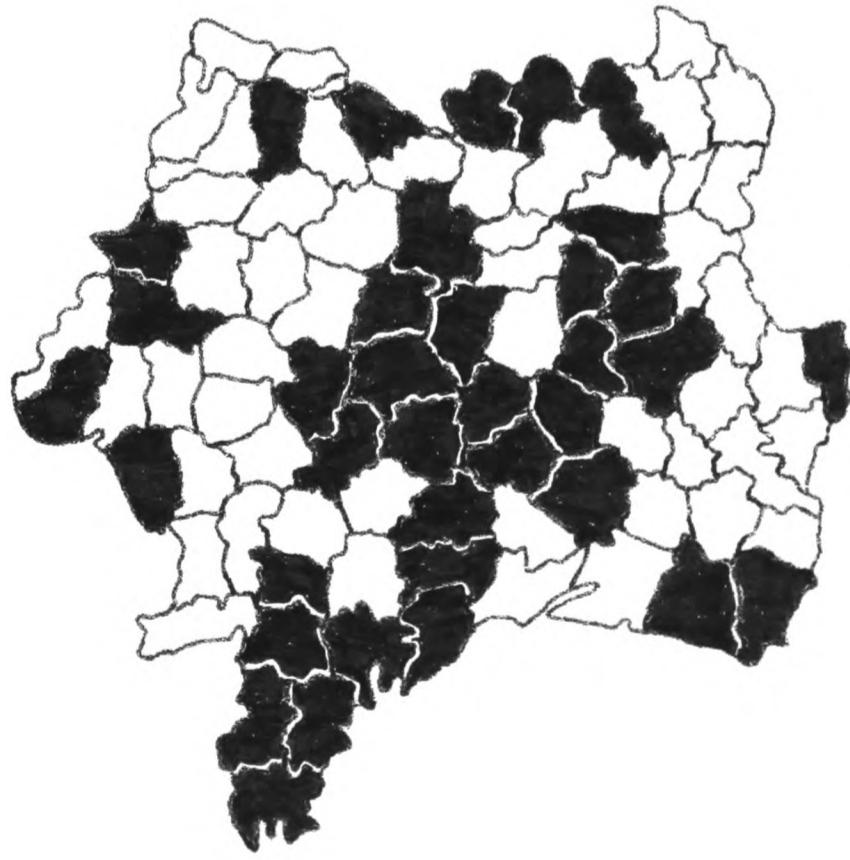


b. Net in-migration



Fig. 4.3 Demographic areas 1891

c. Population pressure



d. Relict areas



In the areas of population pressure, on the other hand, the early fall in fertility so peculiar to France had not yet occurred. In Brittany, the Limousin and the Nord rates of growth are at ('under-developed' levels with annual increases of 2.5% or more. Yet out-migration is not excessive and in no case does it adequately export this rapidly growing population. So in areas of limited natural resources one must consider how this population is being supported, and the major possibility must be in provision of alternative employment at home. This, because of the employment structure, necessarily involves improvement or extension of agriculture.

In 1931 (Figs. 4.4 and 4.5) and 1954 (Figs. 4.6 and 4.7) the relationship between net migration and natural growth is altered by the violent fluctuations in the rate of natural growth which fell dramatically in the years of the Depression and rose again in the post-Second World War 'baby boom'. Areas of population pressure in 1931 are confined to Brittany and some of the still-disrupted areas of Picardy and the Ardennes, and by 1954 to Brittany and parts of the Southern Massif which was experiencing a very low rate of population growth and heavy out-migration. The Massif had become a 'relict' area by 1931 but because of the overall increase in natural growth by 1954 only the department of Creuse experienced natural decline and out-migration.

Fig. 4.4 Natural growth and migration 1931

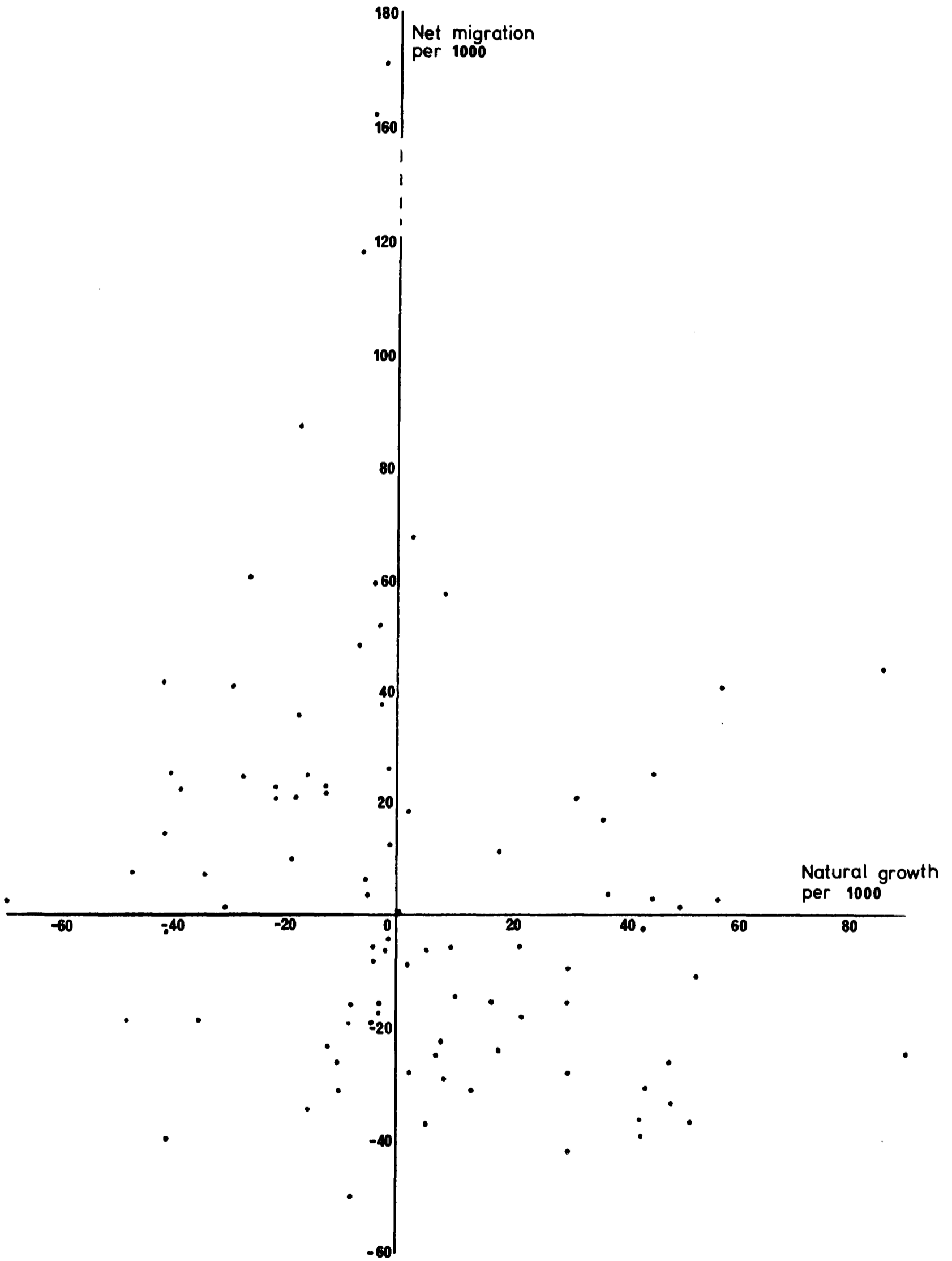


Fig. 4.5 Demographic areas 1931

a. Natural growth



b. Net in-migration



Fig. 4.5 Demographic areas 1931

c. Population pressure



d. Relict areas

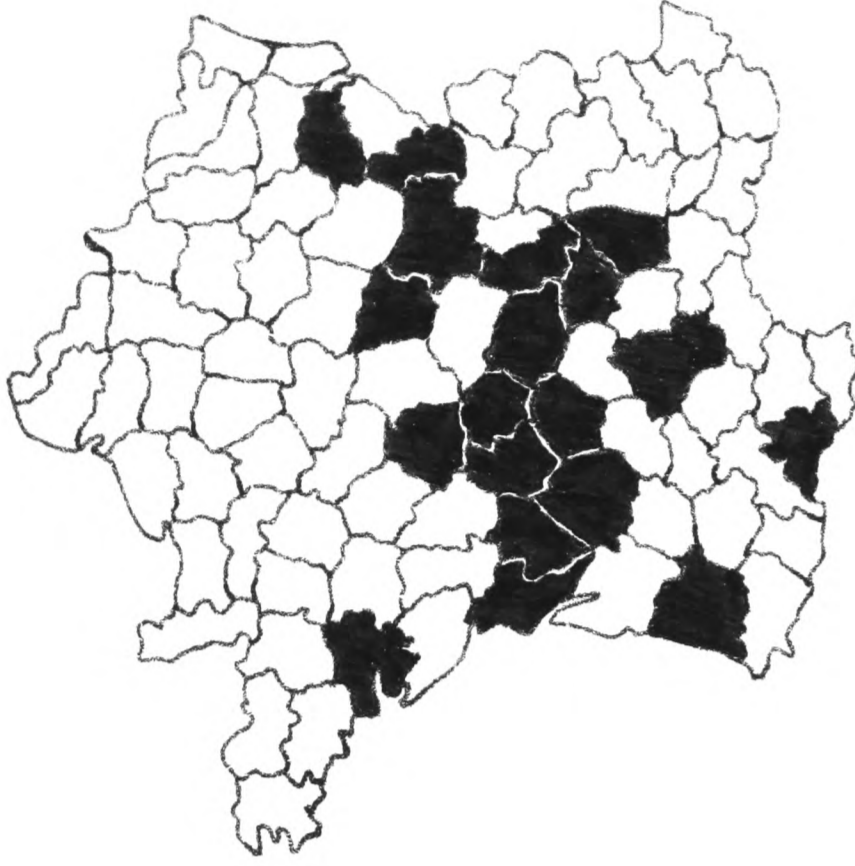


Fig. 4.6 Natural growth and migration 1954

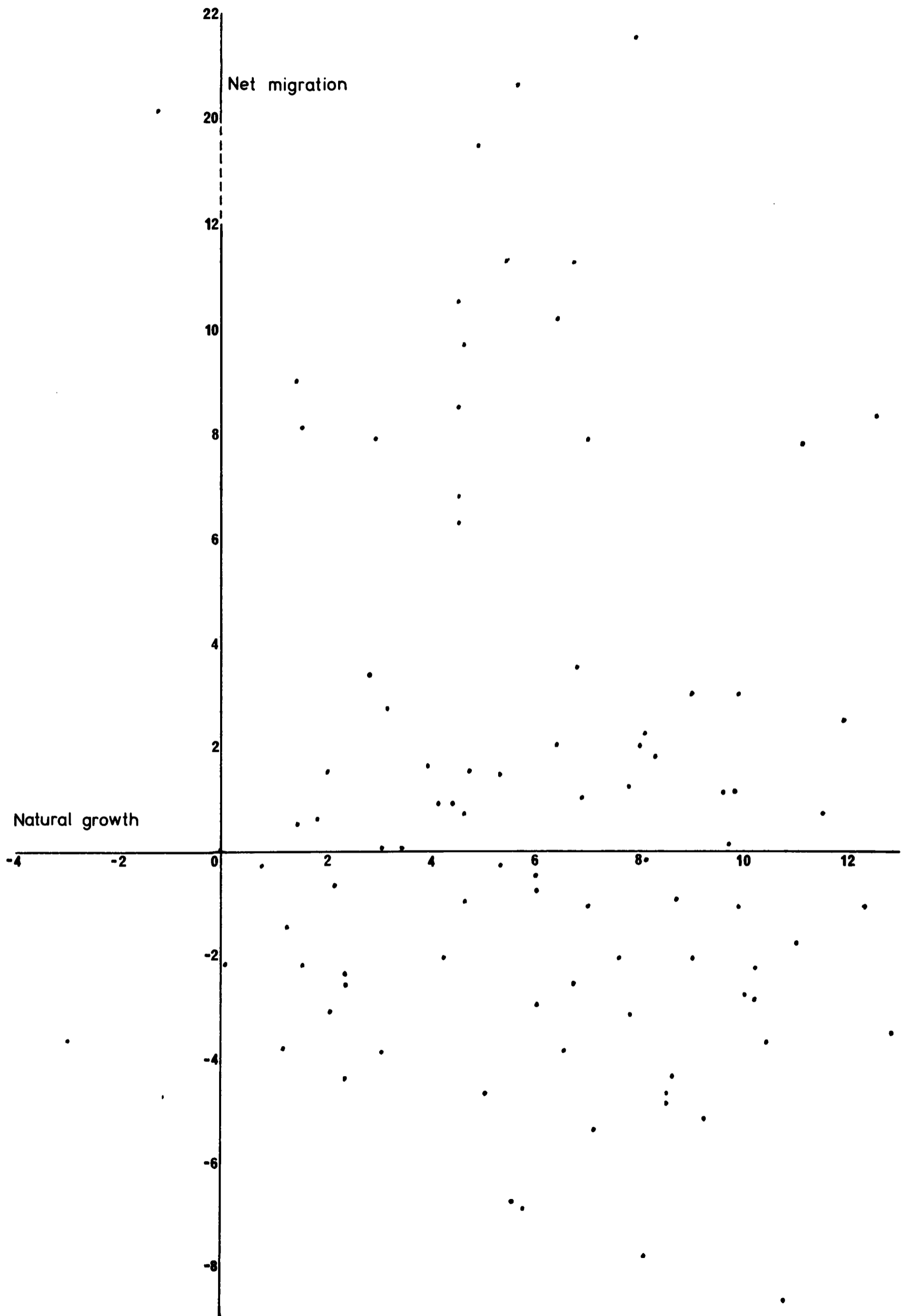


Fig. 4.7 Demographic areas 1954

a. Natural growth

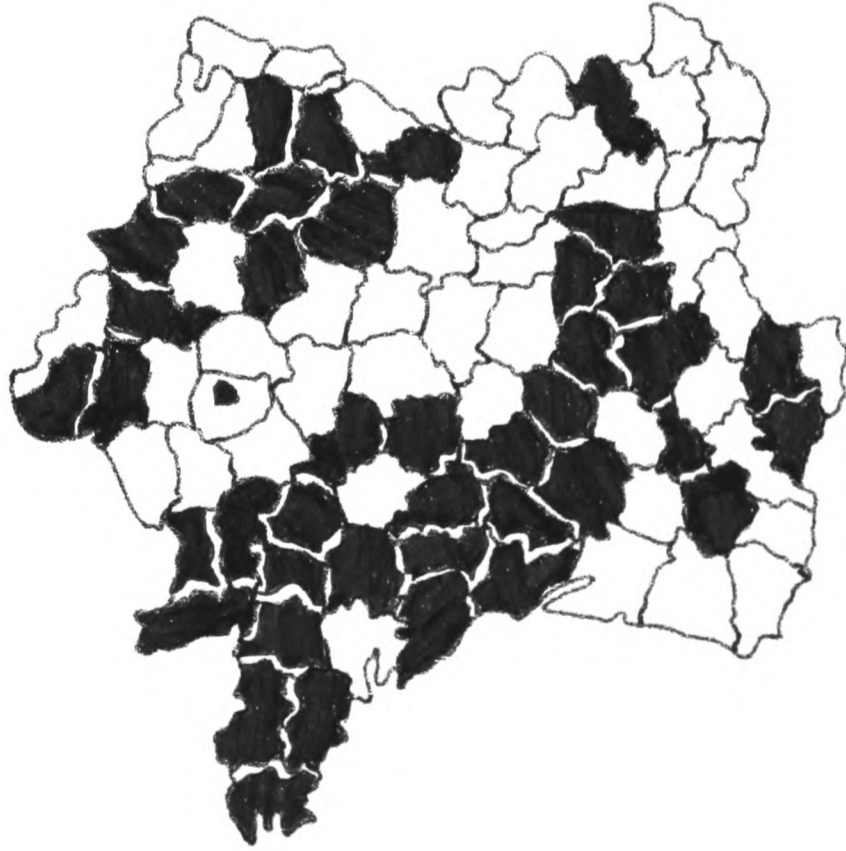


b. Net out - migration



Fig. 4.7 Demographic areas 1954

c. Population pressure



d. Relict areas



The areas of in-migration are more extensive than in 1891 including two types of areas - the fast developing urban areas, and the more steady growth of parts of Burgundy, the Rhône Alpes, Alsace and Aquitaine.

By 1968 (Figs. 4.8 and 4.9) Brittany is no longer the key area of population pressure. The areas of outmigration have become more concentrated on the S. Massif Central, parts of Aquitaine and a continuous band of the older industrial departments from the Nord to Lorraine. The relict areas consist of five of the poorest departments of the Massif and Pyrenean foothills.

The areas of in-migration with natural growth are comparable to 1954, but the areas of very high in-migration include the Alps and Savoie as well as the urban areas. Areas of in-migration and natural decline show six departments, of which Alpes-Maritimes is distinct; it has considerably higher in-migration, exhibiting a continued attraction to the Riviera evident since 1891.

Fig. 4.8 Natural growth and migration 1968

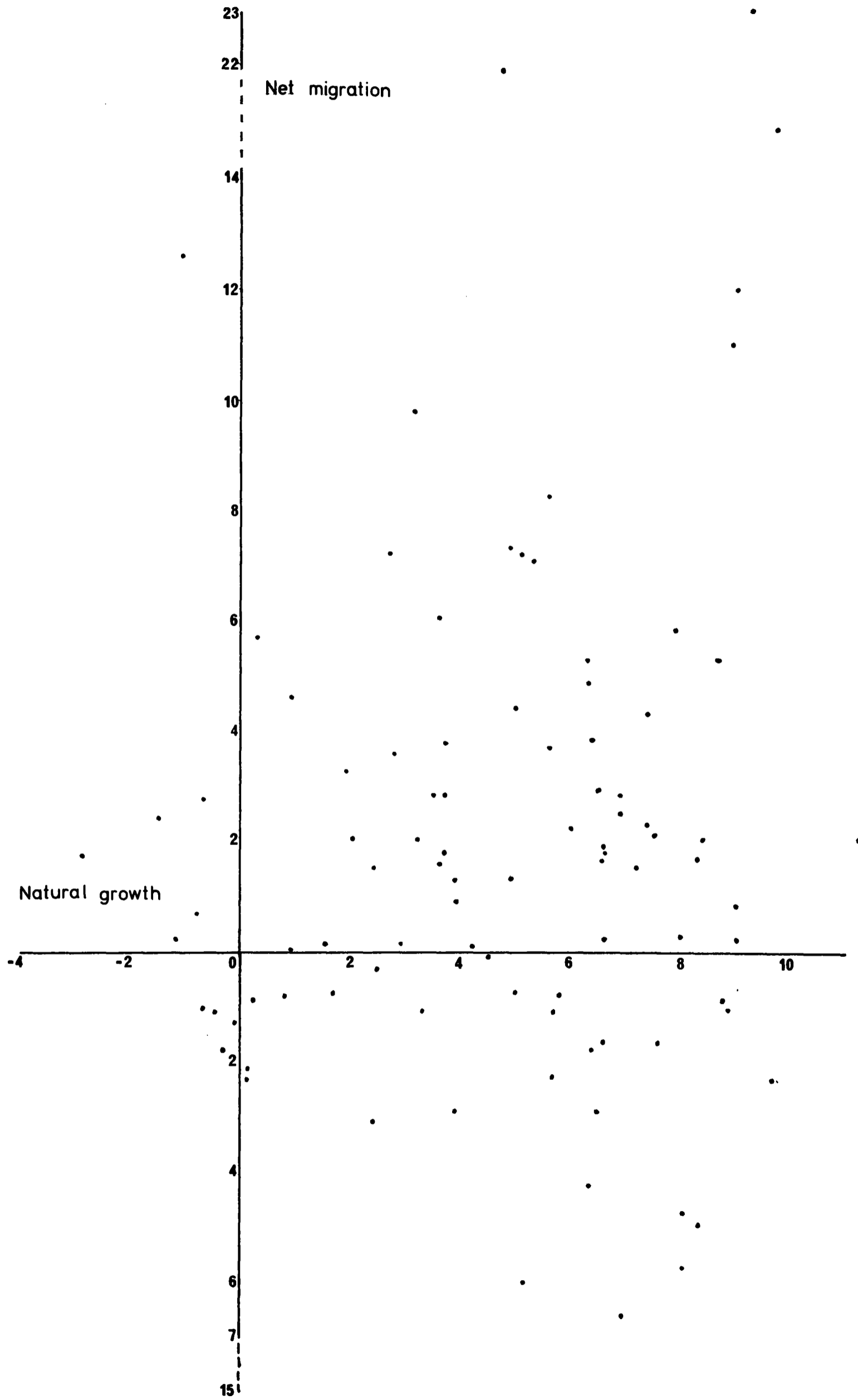
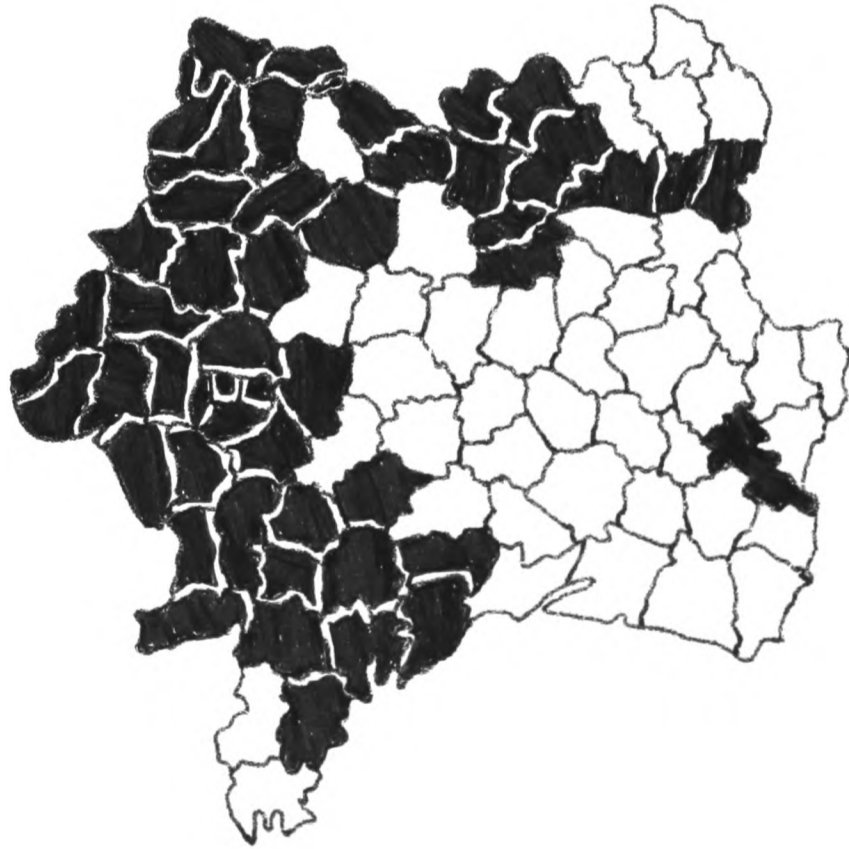


Fig. 4.9 Demographic areas 1968

a. Natural growth

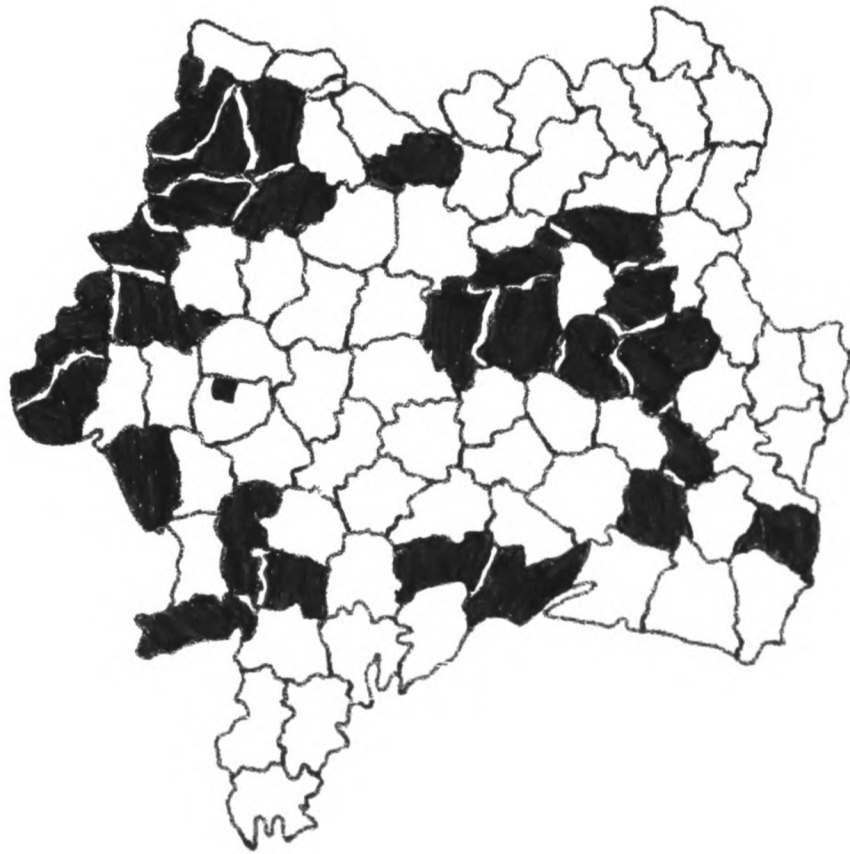


b. Net out - migration



Fig. 4.9 Demographic areas 1968

c. Population pressure



d. Relict areas



#### 4.2 RESPONSES TO POPULATION PRESSURE: OUTMIGRATION OR AGRICULTURAL IMPROVEMENT?

Areas of population pressure i.e. with high rates of natural growth and outmigration, from the Limousin and Brittany in 1891, to the Southern Massif and the departments of the North and North-East by 1970, have been pinpointed in the last sub-section. These areas are likely to have labour in excess of their requirements for the employment available. There are thus three options open to the people living in them; either to emigrate to industrial and tertiary occupations elsewhere; to create alternative labour opportunities in domestic agriculture; or to reduce population size by late marriage, celibacy and family planning. These first two options are studied in this part of the thesis, by study of the relationships of migration with employment types, and by examination of agricultural improvement. The correlations between net migration and employment sectors are summarised in Table 4.4.

Table 4.4. Correlation between net migration and employment sectors

	Primary	Secondary	Tertiary
1891	-0.70 (0.01)	0.43(0.01)	0.70 (0.01)
1931	-0.51 (0.01)	0.38(0.01)	0.68 (0.01)
1954	-0.66 (0.01)	0.54(0.01)	0.54 (0.01)
1968	-0.47 (0.01)	0.20 (N.S.)	0.04 (N.S.)

<sup>1</sup>Employment sectors have been classified into three main groups to overcome changes in classification e.g. in building and public works. The correlation is between net migration in the preceding intercensal period, and the percentage employed in each sector, calculated over all departments of France.

Migration has consistently occurred away from areas of predominantly agricultural employment. This is a movement which implies a change of occupation (Muet 1970), particularly in the years since 1945 when the agricultural labour force has contracted markedly and farming practices have been extensively rationalised (Chapter 3.2e).

This migration is, however, not simply a rural to urban movement. Until 1955 there is strong positive indication of movement towards those areas with secondary or tertiary employment, but this is not significant in 1968 as movements become more complex, and involve as Fielding (1974) suggests both metropolitan decentralization and movement away from declining industrial areas.

Two other aspects of employment may be considered in relation to migration: unemployment and the proportion of women in the labour force, the correlation coefficients of which are shown below (Table 4.5).

Table 4.5. Correlations between migration and unemployment, and women employed

	Unemployment		Women employed	
1891	0.26	0.05	-0.01	N.S.
1931	0.64	0.01	-0.10	N.S.
1954	0.43	0.01	-0.05	N.S.
1970	0.43	0.01	-0.16	N.S.

Unemployment correlates clearly and strongly with in-migration, suggesting that the source areas for migrants have relatively

low levels of unemployment, while the destination areas suffer from higher unemployment. This may be explained in two ways. Firstly agricultural employment - the prevalent type in areas of outmigration - may disguise unemployment and underemployment, a situation complicated by a peasant mentality (which maximises labour input to produce sufficient only for the family), and by seasonal movements of labour. Secondly migrants to certain areas do not necessarily migrate to a job, but to an area where there are opportunities for many types of employment and to the multifarious attractions of the city.

The percentage of women employed in the labour force shows a negative but non-significant relationship with migration, areas of outmigration having more women in the labour force. This is rather surprising as working women and mothers are thought of as an urban and recent phenomenon, but women have traditionally been involved in farm work, usually as family labour without pay. Indeed this continual toil and drudgery has been pinpointed as one among many factors influencing rural emigration:

'Si le village avait un visage plaisant, si les femmes voulaient bien y rester et si le travail des champs enrichissait son homme au bout d'une carrière bien remplie, le problème de l'exode rural serait d'un seul coup résolu.'

(Dept. Ag. Census Morbihan 1929 p.275).

But rural life was not Utopian and the rural exodus continued. The underlying causes were deeper than this: a rapidly

expanding population needed work and for many that necessitated a move away from agriculture: expansion within agriculture could perhaps provide some work, but whether this would provide a satisfying and enriching career is doubtful. It is to the provision of alternative labour opportunities within agriculture that this thesis must now address itself.

Indications of active employment creation are found in agricultural intensification. Improvements and innovations in agriculture may be classified according to whether they create employment, or whether they replace labour by other factors of production. Creation of employment is most obviously seen in extension of the cultivated area, while substitution of labour occurs with the adoption of most machinery. Intensive improvements such as application of fertilisers may also be viewed as substitutes for labour, although they do not fall directly into this category. However, they increase productivity for the same labour input, thereby indirectly releasing more labour to work in sectors other than agriculture. The two types of improvements are listed in Table 4.6. It will be seen that re-forestation has been classified as substituting labour, because the agricultural area is decreased for a less productive and usually less labour-intensive land use.

The improvements which create unemployment (extensive improvements) are therefore considered separately from the

Table 4.6Agricultural improvements and innovationsExtensive Improvements(Creation of employment) caused by:-

Clearance of woodland\*

Clearance of marshes

Clearance of land

Intensive Improvements(Labour substituted by:)(a) Agricultural Improvements

Reafforestation

Drainage

Irrigation of arable land

Irrigation of pasture

Irrigation of market gardens

Use of fertiliser (nitrogenous)

" " " (potash)

" " " (phosphates)

Electrification

(b) All types of agricultural machinery

Ploughs

Mowing machines

Rakes and Tedders

Mechanical drills

Fertiliser spreaders

Binders

Tractors

Cultivators

Balers

Combine Harvesters

\*Categories of improvement listed in agricultural censuses of 1892 and 1929.

intensive improvements. Machinery (all substituting labour) is also considered separately. It is hypothesised that areas of natural growth will have significantly higher extensive improvements in agriculture to absorb labour. This is tested by the use of a one-way measure of association: percentage difference.

The example of percentage difference in land clearance in 1892 is shown in Table 4.7 below:

Table 4.7 Percentage difference 1892 land clearance

Departments with	Land Clearance		No land clearance	
	Number	%	Number	%
Natural growth	19	49	20	51
Natural decline	4	<u>8</u>	44	<u>92</u>
% difference		<u>41%</u>		<u>41%</u>

Data on improvements and machines is all taken from the agricultural censuses of 1892 and 1929, 1955 and 1970. It is hardly surprising that over this period of time different machines are recorded, as new ones are invented and come into current use. Only improvements available for at least two successive census years are included. The best coverage occurs in the early period 1892-1929, with 1970 including very little information on 'améliorations foncières', and only limited types of machinery. However usage of fertiliser is available from 1929. Explanation of the adoption of different types of machines is contained in Chapter 3, and maps of distribution of both machinery and improvements 1892-1970 are included in Appendix 2.

The percentage difference in adoption of innovations between areas of natural growth and those of natural decline are shown for all periods in Table 4.8<sup>1</sup>.

In 1892 it is clear that the improvements which provide land and utilise labour are significantly more widely used in areas of natural growth. This suggests the pressure of population on resources has found an outlet other than migration, and that is the creation of intervening opportunities in agriculture in the home area. Other agricultural improvements are also found more frequently in areas of population growth (with the exception of 'arrossage' where the link with natural decline is indirect through its spatial restriction to the vineyards of the Mediterranean). However, the intensive improvements are not so significantly related to areas of population growth.

The pattern is reversed for much of the agricultural machinery which replaces labour. This is found in areas of natural decline, where labour is relatively scarce. This is particularly noticeable in the case of mowers, which significantly reduce the number of 'moissonneurs' required for both the hay and the grain harvest. The next most used machines in labour shortage areas are binders, and then rakes and tedders, which again reduce

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<sup>1</sup>It was felt necessary to use total population change rather than rural population change because almost all rural areas were losing population.

Table 4.8. Percentage Difference: Natural Growth and Decline

	<u>1892</u>	<u>1929</u>	<u>1955</u>	<u>1970</u>
<u>Extensive Improvements:</u>				
Land clearance	41	7	3 <sup>1</sup>	
Woodland clearance	32	3	19 <sup>1</sup>	
Marsh clearance	32	21		
<u>Intensive Improvements:</u>				
Reafforestation	10	15*	19*	
Drainage	5	6		12
Irrigation of arable	11	7*		) 21*
Irrigation of pasture	16	5		
Irrigation of market gardens ('Arrossage')	10*	21*		
<u>Agricultural machinery:</u>				
Steam engines	1	10		
Water wheels	18	11		
Windmills	8	4*		
Mechanical drills	8	24	36	
Ploughs	4*	12		
Fertiliser spreaders	5*	21	45	
Binders	14*	3	32	
Rakes and tedders	11*	9		
Mechanical mowers	21*	2*		
Tractors		35*	18	7*
Cultivators			14*	12*
Balers			19	25
Combine Harvesters			19	24
<u>Fertilisers:</u>				
Nitrates		10	39	8
Phosphates		33	23	22
Potash		14	32	28

<sup>1</sup>Estimates from changes in land-use 1929-55. Not available for 1970 because of a change in definition of land-use categories.

\*Associated with natural decline.

the harvest labour requirements. It is from this time onwards that the great seasonal movements of labour begin to decline in favour of more permanent outmigration (Corbin).

Ploughs and fertiliser spreaders, although more often found in areas of natural decline, are more generally widespread. Similarly widespread but predominant in areas of natural growth, are steam engines, windmills and mechanical drills. Water wheels are however found more often in areas of natural growth; they may use labour for grinding corn etc. as for windmills, but again their distribution may be accounted for by the availability of suitable sites for water power.

By 1929 the pattern has already become disturbed. The labour market and agriculture had been disrupted by economic depression and foreign competition. The rate of land improvement has declined noticeably with the exception of space-covering reforestation and the continuing progress of 'arrossage' in the Southern vineyard areas. Land clearance has passed its peak as the rural population declines, and as competition makes agricultural production less profitable. Capital-intensive adoption of machinery shows a massive increase, in all categories, despite recession. It may be significant that only tractors, the major innovation of the period, are highly associated with areas of natural decline.

The beginnings of a pattern in the adoption of machinery is emerging. It is known already that machinery becomes more widely dispersed in different regions as it becomes more familiar (Pautard). It appears that in the initial stages of innovation it is adopted where it makes the greatest impact on labour shortage. The maps in Appendix 2 indicate this pattern. In 1892 it is clear that the Greater Paris region is the source area for innovation. From this 'pilot area' it spreads to other areas (see Chapter 3 for comments by Dept. Vols. 1929 Ag. Census), where it is more suited to the agriculture of that area. Thus mechanical mowers, and rakes and tedders, both principally for hay, spread from the source region to those areas of a more pastoral agriculture, whereas binders (for cereals) spread ~~throu~~ throughout the cereal growing areas.

However, the pattern of land improvement in relation to natural growth is less clear than in previous years. Labour-consuming improvements are still related to areas of natural growth, so providing some outlet for surplus labour. However, the relationship is less marked than previously although marsh clearance remains at the same order of magnitude. Reafforestation is associated with natural decline, as is arrossage as in 1892.

The 1955 data reveals a combination of these trends. Woodland clearance remains high in areas of natural growth (data on marsh clearance is not available singly) whereas

reaforestation occurs with natural decline. This is also the case for 1970 for the limited data available, although irrigation is again associated with areas of natural decline because of its prevalence in the Southern vine-growing districts and elsewhere in the Midi.

The adoption of machinery postwar is, however, predominantly associated with natural growth. Tractors, as binders and rakes and tedders, in the previous period, became more widespread in areas of natural growth. Cultivators are the only exception which, like 'arrossage' are distinctively characteristic of Southern agriculture. Thus the pattern of machinery adoption with natural growth has shown that in this postwar period it changes as the pattern of natural growth changes. The postwar pattern of association with natural growth is by this stage merely indicative of association with the Northern commercial arable departments. By 1955 if not sooner the adoption of machinery is unrelated to population movements but is rather a function of the spatial pattern of agricultural advance. Agriculture has become an industrial process almost unconnected with changing rural populations. Thus it is clear that the pattern of machinery adoption shows two stages: firstly origins in the Paris region, secondly dispersal to areas of greatest agricultural suitability. The use of machinery in areas of labour scarcity in the early years of the twentieth century may have been no more than a coincidence. Yet the two are self fulfilling - a

profitable mechanised agriculture needs less labour, and then being profitable and successful is likely to invent and adopt new ideas. The need for agricultural produce for the great market of Paris will have had effects on both labour and mechanisation; it can hardly be dismissed as coincidence.

It is therefore likely that machinery is not fundamentally related to labour saving, but the saving of labour is a byproduct of its adoption in other regions; agricultural improvements are constantly related to provision of intervening opportunities for surplus labour. This provision of agricultural employment becomes less important as time goes on, and opportunities become available in sectors other than agriculture.

The adoption of fertilisers consistently occurs in areas of natural growth, (especially phosphates in the early years), reflecting a need to produce extra food in times of difficulty: in the later postwar years it is associated, as is machinery, with the Northern arable and cereal growing districts.

Having examined the pattern of agricultural improvement which provides employment for labour, let us reconsider the conclusions of Chapter 3 on the labour requirements of the different types of agricultural areas, and the matching of labour availability and migration.

In 1892 the pattern was clear. Areas of high natural growth had two main outlets for surplus labour; land clearance and intensive agriculture, and outmigration. In 1929 labour demand and supply was not matched. It will be recalled that in 1929 and 1955 more outmigration than expected was occurring from those agricultural areas engaged in intensive polyculture. These areas of intensive polyculture, particularly the Limousin, Brittany and parts of Picardy, were areas of high natural growth which absorbed some labour by clearance of land. The excess emigration from these areas must be accounted for by the combination of factors: the poverty of agricultural development extended where possible to its technological limits, and the pressure of population growth. Intensive polyculture was able to absorb some of its own excess population, and emigration occurred in later years despite only low population increase. It is noticeable indeed, how the Limousin, which had lowered its <sup>birth</sup>rate substantially by 1931, was still undergoing emigration and land clearance, suggesting its agricultural resources were even later in development than in the Garonne, an 'agricultural revolution' still occurring which had finished a hundred years earlier in other parts of France (Pautard). On the other hand, in 1929-55 the subsistence polyculture and livestock rearing areas of Eastern France while having little or no natural growth and no extension of the agricultural area could not absorb any surplus rural labour, and so had substantial rural emigration rates.

By the 1950s and 1960s the relationship between agricultural structure, agricultural improvement and emigration is more tenuous. The adoption of agricultural machinery has been seen to be less clearly related to agricultural labour requirements in the post-war period than in the earlier years. Similarly the overall gain in population 1950-1970 by areas of subsistence polyculture is related to opportunities in sectors other than agriculture particularly urban and tourist developments; and the consistent decline of the southern Massif Central and parts of Aquitaine while in part attributable to the poverty of the natural environment has become part of a wider cumulative process of decline.

In conclusion outmigration has become less related to agricultural labour requirements as the agricultural sector has ceased to dominate total employment structure. However there has not been a simple progression or in any case a simple relationship. Agricultural structure determines the viable population maximum in an area (assuming relative self-sufficiency) whereas the rate of agricultural improvement acted in areas of population pressure (Brittany and Massif Central) as an intervening variable between natural growth and migration. (In areas where there was no scope for extension (livestock and subsistence polyculture areas) there was no alternative to outmigration). However the precise nature of the relationship is determined by the scope of agricultural opportunity; and the whole concept

falls apart as nationwide and worldwide transport networks reduce the importance of domestic agriculture to the support of the community and factors other than agriculture assume a greater importance. Some of these other factors of the migration environment are examined in the next section.

### 4.3 AMENITIES: HOUSING, HEALTH AND EDUCATION

This section examines the amenities and services available and levels of key social indicators of housing health and education prevailing in areas of outmigration and in-migration. The correlations of net migration with the variables available in 1891 and 1931 are shown in Table 4.9.

Table 4.9 1891 and 1931 correlations between net migration and socio-economic variables

	1891		1931
	Correlation coefficient	Significance level	
	r		
Persons per dwelling	- 0.41	0.01	-0.24 N.S.
Infant mortality	0.36	0.01	0.11 N.S.
Violent deaths	Not available		0.34 0.01
Other causes of death	" "		Not significant

In 1891 the only indicator of housing quality was a measure of overcrowding<sup>1</sup>, which is, however, also an indirect indicator of family size. This correlation suggests out-movement from large rural families and overcrowded homes, and furthermore suggests that the urban population contained a large proportion of single people or small families. The scant evidence on housing conditions available at the turn of the century may be supplemented from the enquiry into the rental value of housing carried out by the Ministry of

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<sup>1</sup>The most satisfactory measure of overcrowding is persons per room (overcrowding = >1 or 1.5 persons per room) but this was not available.

Finance as a result of the law passed on 8.8.1885<sup>1</sup>, which is summarised in figs. 4.10a and 4.10b.

The survey emphasises the continuing urbanisation of population and housing since 1851, but finds that the houses of lowest rental value are in the rural areas, which by 1891 are suffering most outmigration:

' Les immeubles d'une valeur minime sont... très nombreux en Bretagne et dans les régions du Centre et du Midi, si l'on excepte toutefois les départements maritimes et le centre Lyonnais'.

(p.29)

These sources give no further indication of housing amenity with the exception of storeys per house, a variable of little value. Although the largest cities have the highest buildings with three or more storeys, beyond that the prevalence of either one- or two-storied buildings is a matter of choice and architectural custom (Houston 1954), rather than an indication of deprivation or wealth.

The evidence from the census of population and the land-tax survey shows that urban areas have the largest houses with higher rental values. However, urban areas contained extremes of housing conditions: Bastié (1967) describes the urban environment of Eastern Paris at the turn of the century as poor housing interspersed with industrial buildings:

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<sup>1</sup>France, Ministère des Finances. Les résultats de l'évaluation des propriétés bâties. Paris. Imp. Nat. 1891.

Fig. 4.10a Rental value of housing 1891



Fig. 4.10b Percentage of houses

with rental value < 20 fr. 1891



'L'habitat mêlé aux usines est peu diversifié: des immeubles rudimentaires en blocage de trois ou quatre étages, loués à des prix relativement bas, n'ont aucun confort'

(p.82)

With several rents being paid in each building, the landlord made a good profit, but the tenants had little value for their money:

'La majorité des maisons lépreuses, sans confort, offraient un rapport substantiel compte tenu de leur qualité inférieure: c'est le 'garni' des littératures populaires du XIX<sup>e</sup> siècle. Ce n'est que durant la période 1920-1938 que l'amélioration entreprise fut efficace, en rasant les taudis pour les remplacer par des habitations bon marché où à loyer modéré manifestant un désir de promotion sur place.'

(p.83)

Before the turn of the century, and for the first years of the twentieth, urban housing was relatively expensive but ill-equipped for the average migrant. It is, however, probable that the average conditions in rural areas remained poor for even longer than in the towns. Evidence of rural housing conditions is contained in the commentary volumes of the 1929 agricultural census.

Some modern conveniences such as electricity were becoming available by 1929 especially around the urban areas such as in the vicinity of Limoges. However in the more isolated parts of Hte-Vienne, the families of métayers all shared one room with only rudimentary furniture and a rubble floor, the whole dominated by the huge fireplace and chimney.

'Les vieux utensils typiquement Limousins sont toujours en usage.

.... Si quelques sérieuses concessions au confort et au modernisme ont été faites au cours de ces dernières années (éclairage, électrique, cuisinières, etc), les conditions générales de la vie au foyer rural n'ont cependant pas beaucoup évolué dans l'ensemble de la masse agricole'

(p.339)

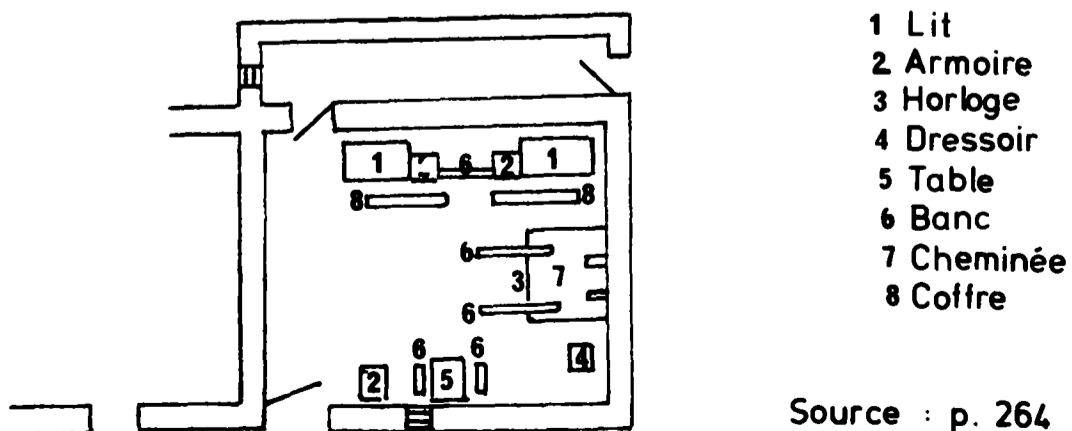
The layout of a typical agricultural house is more closely defined in the Morbihan volume:

'On ne rencontre plus guère la pièce unique servant à la fois au logement des humains et a celui des animaux; mais, fréquemment encore, les édifices de la ferme se réduisent à un seul bâtiment, divisé en deux par une mince cloison. L'une des divisions sert au logement de tout le bétail; la seconde est occupée par le fermier, sa famille, son personnel; le tout est surmonté d'un grenier'.

(p.249)

The room for the family served as kitchen, dining-room, bedroom and dairy. The furniture consisted of beds, chairs, table and benches, dresser and cupboard. All openings (doors, windows) were small in size and number, and in general faced South. The inside, usually devoid of decoration, was continually dark and smoky. The plan of an interior of a typical dwelling is based on a diagram from the Departmental Monograph of Morbihan drawn by H. Condé (Fig.4.11)

Fig. 4.11 Farm dwelling in Morbihan c. 1929



Source : p. 264

It is interesting to note that housing conditions in small towns were probably better than either rural areas or the large cities. In Morbihan the town houses boasted paved floors, separate dining rooms and a spare room for domestics:

'les domestiques ont une chambre à eux, peu luxueuse, il est vrai, mais qui vaut mieux, dans tous les cas, que les lits d'écurie'.

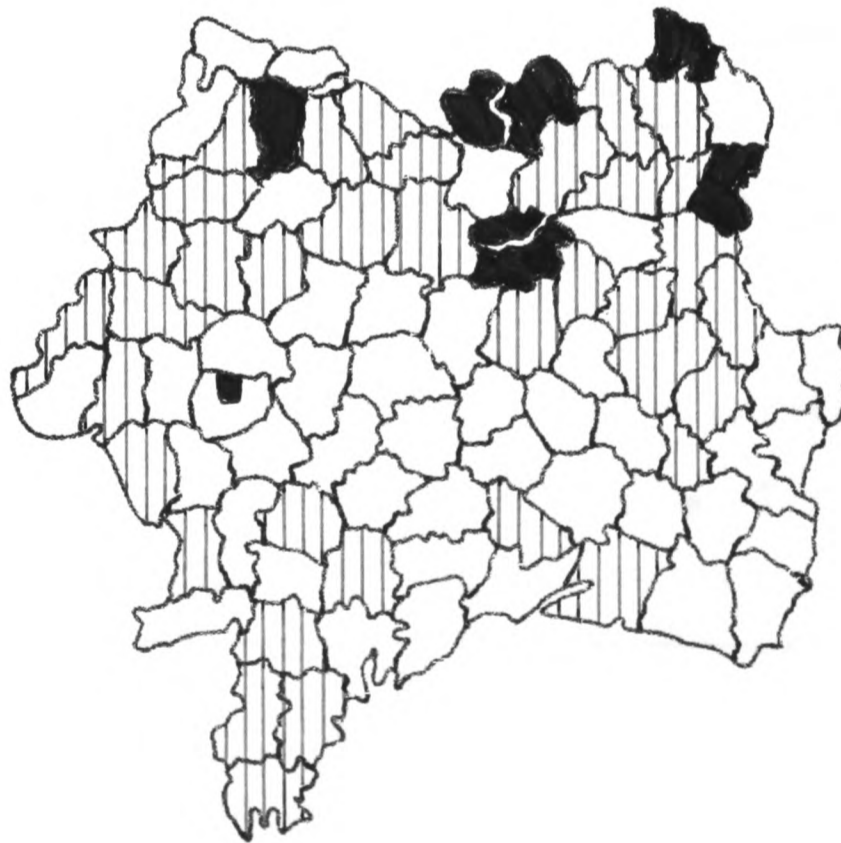
(p.274)

Thus before the Second World War people were moving away from poor overcrowded conditions to urban areas of variable housing quality. It is, of course, likely that the average rural-urban migrant went to worse conditions, to form the urban poor.

This paradoxical situation - from the frying-pan into the fire - is paralleled by other conditions. In 1891 there is a strong positive relationship between immigration and infant mortality (shown on Fig.4.12) when the infant mortality rate was extremely high, estimated at 16% of births. From 1891 the rate of infant mortality declined rapidly (Nadot 1970) and by 1931 had assumed its modern pattern, with the worst rates evident in the Southern Massif. Also by 1931 in-migration areas had the highest rates of violent deaths, predominant in urban areas, and also in Lorraine where they may be attributable to industrial causes, and in parts of the Alps where they may be a result of a combination of physical and industrial factors.

Fig. 4.12 Infant mortality

a. 1891



▨ > mean

b. 1931



■ > 1 st. dev.

However, although people appeared to be moving from bad conditions to worse in terms of housing and health, this is not the case with education. Illiteracy data from the 1901 census shows (Fig.4.13) that illiteracy was highest in rural areas, notably the Massif Central and Brittany. Illiteracy in the countryside was particularly common amongst women, and in some departments such as the Creuse, Landes and Finistère, almost half the female population were illiterate.<sup>1</sup> This problem was worsened by the out-migration of younger more highly-motivated people, many of whom were better educated than average, and by the attraction of urban areas with better educational facilities for migrants.

This pattern of migration is clear-cut, with people moving from an overpopulated countryside to urban areas with a wider range of employment and educational opportunities, but poorer social conditions, unemployment, infant mortality and lower fertility. It does, however, become more complex in the period after the Second World War.

The post-war migration environment is clarified by a larger range of variables, the correlations of which with net migration for 1954 and 1968 are shown in Table 4.9.b

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<sup>1</sup>Women, of course, received less schooling, but the problem was aggravated by the continued use of local dialects before the First World War (Weber 1974).

Fig. 4.13 Illiteracy

a. Males > 15 yrs.



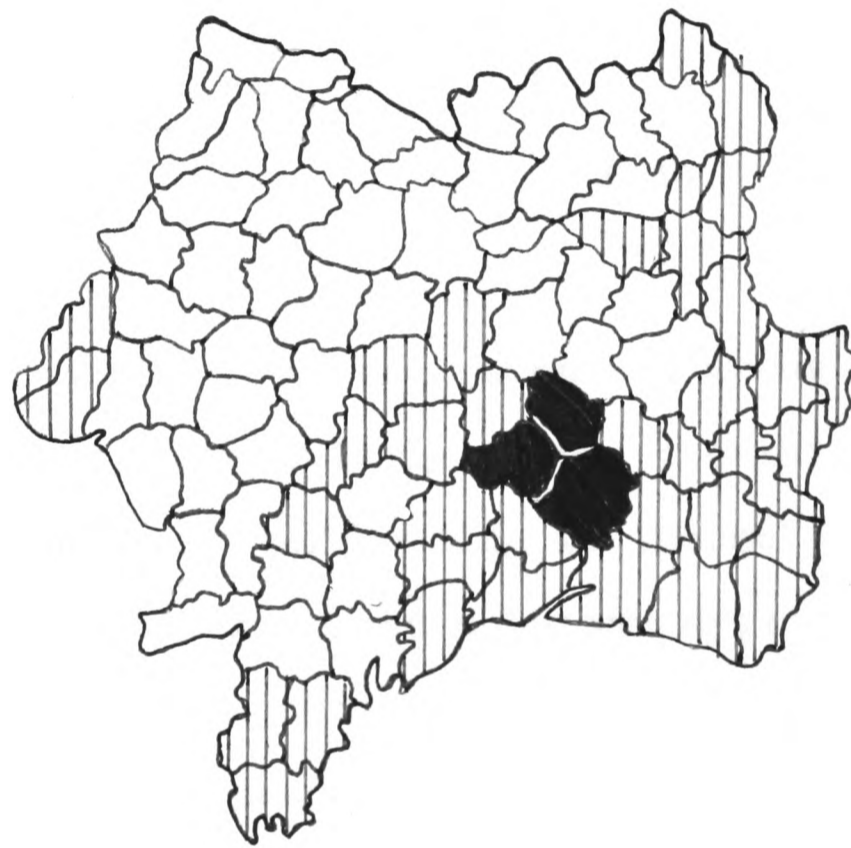
b. Females > 15 yrs.



▨ > mean

■ > 1 st. dev.

Fig 4.13 c Illiteracy 1931



▨ > mean (5.07 p.c. of population aged 10 or over)

■ > 1 st. dev.

Table 4.9.b Correlations 1954 and 1968 between net migration and socio-economic variables

	1954	Significance level	1968	Significance level
Persons per dwelling	-0.13	N.S.	0.12	N.S.
Houses with bath	0.53	0.01	0.78	0.01
Houses with W.C.	0.45	0.01	0.67	0.01
% houses owned	-0.45	0.01	-0.20	N.S.
Infant mortality	-0.10	N.S.	-0.27	0.05
% deaths caused by tuberculosis	0.29	0.01	-0.01	N.S.
Cancer	0.38	0.01	0.13	N.S.
Bronchitis/ Pneumonia	-0.05	N.S.	-0.10	N.S.
Violent deaths	0.41	0.01	-0.12	N.S.
Suicides	0.21	0.05	-0.11	N.S.
Education above primary level	0.44	0.01	0.35	0.01

The level of amenities in the reception areas has improved dramatically, particularly in the provision of housing. The evidence on overcrowding is inconclusive, but it is clear that the urban and suburban areas attracting migrants have much higher amenity levels than outmigration areas of the Massif and the industrial departments of the North and North East. The dramatic improvement in housing quality occurred after the Second World War, when severe housing shortages resulted from war damage and from pressure on housing stock caused by the 'baby boom'. To combat these shortages urban housing was rapidly constructed, including the notorious 'Grands Ensembles' such as those at Sarcelles, which despite their problems<sup>1</sup> provided basic accommodation for young families particularly of noise and social isolation.

of reasonable quality. From 1954 onwards the HLM<sup>1</sup> programme was extended and private house building has accelerated since 1966. (Pinchemel 1969). The improvement in housing conditions coincides with continuing high levels of education in immigration areas and high levels of medical care, as shown by low infant mortality rates.

The evidence on causes of death is less conclusive, possibly because it is affected by the age structure of the population concerned, and possibly because of the general improvement in health standards. In an age of better general health the distribution of disease is more uniform, and may be less relevant to a study of migration environments. Fig. 4.14 supports the impression that particular diseases are typical of particular environments (e.g. T.B. in the industrial North, violent deaths in Lorraine and Savoie, attributable to industrial and physical factors) but that these cannot be directly linked to migration patterns and processes.

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<sup>1</sup>Habitations à loyers modérés

Fig. 4.14 Causes of Death 1931, 1968.

a. Tuberculosis

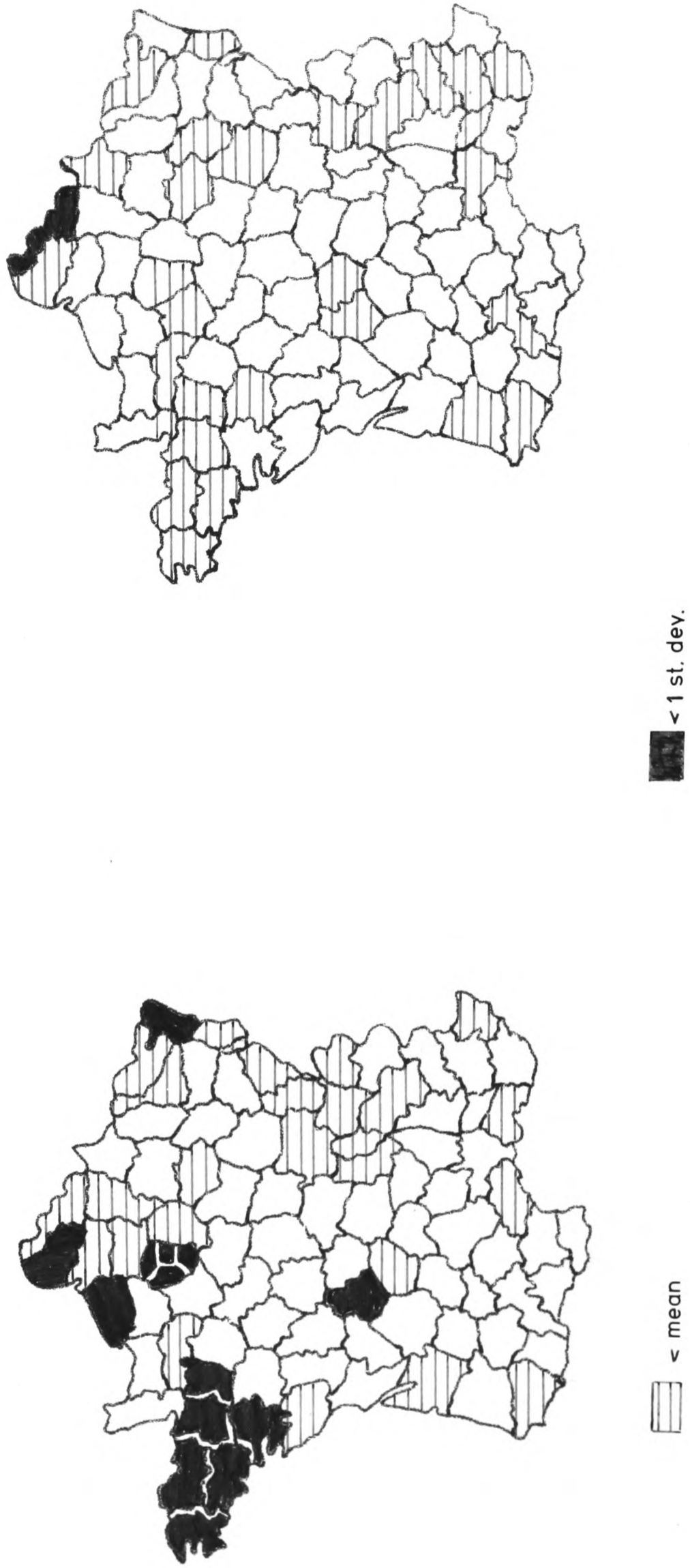


Fig. 4.14 Causes of death 1931, 1968.

b. Bronchitis & pneumonia



Fig. 4.14 Causes of death 1931, 1968.

c. Suicides

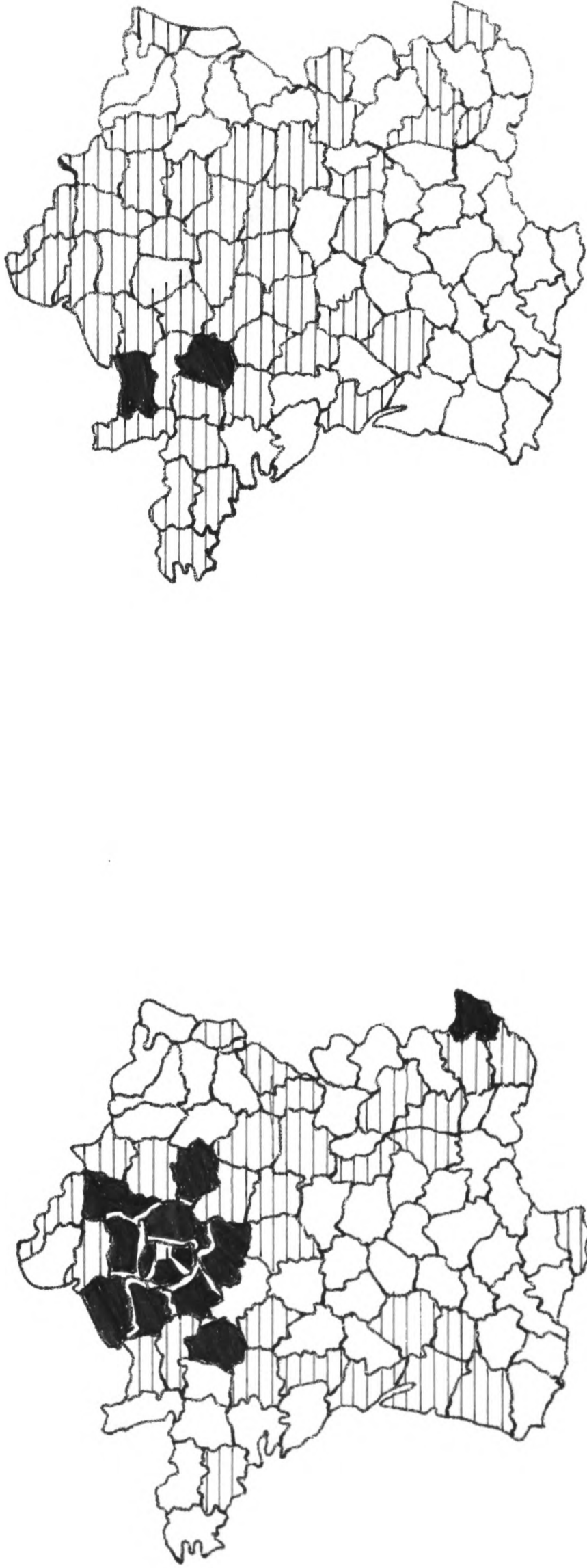


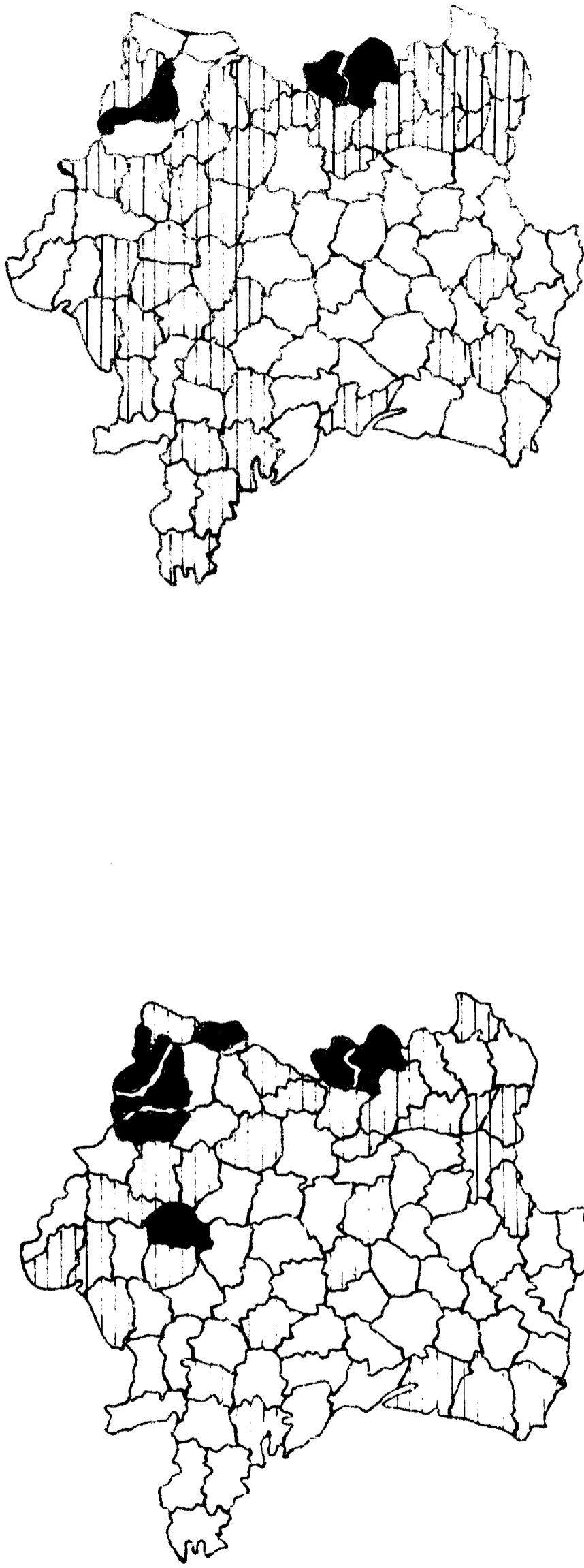
Fig. 4.14 Causes of death 1931, 1968.

d. Cancer



Fig. 4. 14 Causes of death 1931, 1968.

e. Violence



#### 4.4 SUMMARY AND CONCLUSIONS: AREAS OF INMIGRATION AND OUTMIGRATION

The demographic, agricultural and socio-economic context to migration has been discussed and is summarised in the accompanying <sup>(Tables 4.10 a to d)</sup> tables, which compare average values of the socio-economic variables in areas of in-migration and areas of out-migration at each time-period.

In the 1890s and 1930s there is a clearcut pattern of emigration from rural areas of population pressure to urban areas with a wider range of employment but poorer social conditions, unemployment, infant mortality and low fertility. By the 1950s a dual migration is evident, a continued rural-urban movement but also emigration from larger metropolitan areas together with a greater rural-urban balance in social conditions, the balance being tipped in favour of the urban areas in terms of health and modern amenities. This dual movement is further evident in 1970, the average figures masking the true range of areas. By 1970, however, there is a definite movement away from areas of population density and urban areas. The areas of in-migration are more rural but less agricultural (suburban?) have better amenities and higher fertility, but marginally more unemployment, and more deaths by violence, suicide and cancer.

Thus the change in the social context of migration occurs between the 30s and 50s, a change from the 'transitional' society to the 'advanced'. (Zelinsky).

The relationships between a very large range of variables and migration have been reviewed to ascertain the characteristics of areas of outmigration and immigration. A complete picture of the nature of areas with different migration histories can only be gained when all the variables are considered simultaneously. Only in this way can the most significant independent variable be distinguished.

After examination of the correlation matrices it was hoped to use the scores from Principal Components Analysis as input to multiple regression, to reduce input data and to ensure independence of variables. Accordingly, principal components analyses of the entire data matrix and of the major subsets were computed e.g. all the agricultural or demographic variables. However, the resulting components were in the case of the subsets, single components, loading heavily on one variable only, and producing no general components. Thus the data matrix was not successfully reduced, and use of these component scores would have merely added to the complexity of the analysis. Furthermore, components of the entire data matrix produced general components many of which could not be interpreted satisfactorily, and dominated in each case by the weight of the agricultural variables.

The research strategy was therefore altered to multiple regression of the original data matrix, transformed by use

of logarithms where necessary to conform to a normal distribution. A stepwise procedure was adopted, such that the highest explanatory variable was introduced first into the equation, then the second and so on, with a minimum F value of 4 and a maximum of 15 variables as cut-off points.

Table 4.10. <sup>1891</sup> Socio-Economic Characteristics for areas of net in-migration and net out-migration (mean values)

	1891		
	Out-migration	National	Inmigration
Population density	59.62	144.53	411.72
% rural	75.94	62.68	38.43
% 0 - 20	37.91	36.49	33.89
% > 65	12.96	12.43	11.45
% male	49.79	49.86	50.07
Natural growth	3.84	2.29	-2.55
Infant mortality (still births)	4.49	4.63	5.28
Persons per house	3.56	3.49	3.25
% unemployed	0.67	0.76	1.11
% women employed	28.25	29.09	30.40
% ag. emp.	53.33	41.69	23.74
% ind. emp.	24.89	32.19	43.44
% tert. emp.	21.78	26.12	32.82

Outmigration Dept. are 66 in number, containing nearly 25m (65% of the population)

There are 21 inmigration depts. containing 13.5m (35%).

Table 4.10b. <sup>1929</sup> Socio-Economic Characteristics for areas of net in-migration and net outmigration (mean values)

	1929		
	Emigration	National	Inmigration
Population Density	58.64	185.58	324.06
% Rural	71.37	62.54	52.94
% 0 - 20	31.91	30.29	28.33
% > 65	14.46	13.70	13.21
% male	47.56	45.28	43.64
Natural growth per 1000	5.20	3.09	-0.56
Infant mortality per 1000	73.1	74.2	75.3
% Deaths by TB	8.50	9.27	9.87
Cancer	4.72	5.34	5.81
Bronchitis/ Pneumonia	5.16	5.03	4.93
Violence	2.78	3.01	3.18
Suicide	0.96	1.02	1.07
Persons per House	3.37	3.34	3.31
% Unemployed	1.07	2.10	2.91
% Women employed	38.10	36.56	35.53
% Agricultural emp.	49.61	35.65	24.61
% Industrial emp.	34.24	42.84	49.62
% tertiary emp.	16.15	21.51	25.75

Table 4.10c. 1955  
Socio-Economic Characteristics of areas of net  
in-migration and net out-migration (mean values)

	Emigration	National	Inmigration
Population Density	294.46*	192.31	92.60
% Rural	46.68	44.17	42.17
% 0 - 20	29.92	29.98	30.04
% > 65	11.35	11.91	12.31
% male	47.60	47.96	48.26
Natural growth per 1000	6.21	6.07	5.81
Infant mortality 0/00	38.95	36.48	34.12
% Deaths by TB	2.89 <sup>4</sup>	2.71	2.56
Cancer	15.24 <sup>3</sup>	15.15	15.08
Bronchitis/Pneumonia	4.53 <sup>2</sup>	4.57	4.61
Violence	4.65	4.88	5.08
Suicide	1.40	1.35	1.32
Educ (7 C.E.P. pers. 14)	8.25	7.80	7.43
Persons per House	3.11	3.19	3.25
% houses with bath or shower	9.53	10.40	11.13
% houses with W.C.(inside)	24.69	26.61	28.45
% owned	34.48 <sup>1</sup>	35.45	36.26
% unemployed	1.65	1.74	1.82
% women employed	37.02 <sup>5</sup>	34.63	32.57
% agricultural emp.	31.22	27.63	24.55
% industrial emp.	35.98	39.73	42.96
% tertiary emp.	31.79 <sup>7</sup>	31.48	31.21
Corsica excl.	Total Population	42 depts. 42,763,280 18,899,330 44.45%	48 depts Corsica 246,120 23,617,830 55.55%

\*This would be 52.14 except for Paris (Seine) with a density of 10714.2

<sup>1</sup>Would be 44.42 without Paris (13.84% owned) <sup>3</sup>14.20%

<sup>2</sup>Would be 4.74 " " <sup>4</sup>2.70 <sup>5</sup>35.08

<sup>7</sup>" " 24.35 " "

<sup>6</sup>Each adds up to c. 98% because of activities not declared.

Table 4.10d. 1970 Socio-Economic Characteristics for areas of net in-migration and net out-migration (mean values)

	Emigration	National	In-migration
Population Density	1329.62	589.80	170.57
% Rural	26.74*	30.04	32.11
% 0 - 20	32.56	32.20	32.00
% 65	14.48	13.40	12.80
% male	49.98	48.70	48.19
Nat.gr.per 1000	4.08	4.66	5.00
Inf.mort.per 1000	18.29	17.23	16.66
% Deaths by TB	1.05	0.97	0.92
Cancer	17.77	18.77	19.35
Bronchitis/ Pneumonia	2.68	2.61	2.57
Violence	6.70	7.21	7.51
Suicide	1.28	1.39	1.45
Education	50.32	51.18	52.00
Persons per house	3.32	3.31	3.30
% houses with bath	43.46	47.50	50.35
% houses with inside W.C.	48.91	51.80	53.82
% houses owned	39.63	43.20	45.71
% active pop'n unemployed	1.73	1.80	1.84
% women employed	33.54	34.90	35.67
% agricultural emp.	23.94	14.90	9.78
% industrial emp.	39.78	40.36	40.80
% tertiary emp.	35.49	75.08	96.51

\*this would be 36.93 without the 5.3 m urban population of Greater Paris (Paris, Hauts de Seine, Seine St. Denis).

The significant results of the multiple regression analyses are listed in Table 4.11. In each case there are six to nine significant variables explaining a high proportion of the total variance. As suggested by analysis of the indicators separately and by further analysis of the agricultural variables, the context of migration has altered significantly through the years.

In 1891-2 the most important 'explanatory' variable was the percentage of rural population (in communes of less than 2,000 people). This suggests people moving away from rural areas, from overcrowded houses, from an aged population to tertiary employment and areas of population density. Many of the same variables recur in the 1929-31 analysis, significantly perhaps in this era the factors of natural growth and unemployment are included as negatively and positively related factors respectively. Migration is at this stage essentially a rural-urban movement. By 1955 there are nine significant variables, indicative of the growing complexity of migration and its causes. It is still evident there is a movement away from rural areas and agricultural employment to areas whose characteristics are higher incidence of cancer, larger size of farms, more persons per house, unemployment and women employed. This suggests urban areas yet the ninth variable to be included is a negative relationship with tertiary employment. This indicates possibly a movement to areas of secondary employment, or a subsidiary movement away from urban areas. It is indeed

Table 4.11. Multiple regression of factors affecting net migration 1891 - 1970

	<u>1891-2</u>	<u>Beta</u>	<u>1929-31</u>	<u>Beta</u>	<u>1954-5</u>	<u>Beta</u>	<u>1968-70</u>
Rural population	-0.24	Rural population	-0.24	Agricultural empt.	-0.13	Houses with bath	0.60
Tertiary empt.	0.41	Natural growth	-0.59	Bronchitis/Pneumonia	-0.23	Population density	-0.41
Persons per house	-0.48	Tertiary empt.	0.20	Cancer	0.30	Cereals	0.49
% population >65	-0.33	Population density	0.22	Persons per house	0.17	Persons per house	-0.12
Marsh clearance	-0.19	Unemployment	0.46	Mean size farm	0.46	Combine harvester	-0.024
Land clearance	-0.14	Persons per house	0.20	Rural population	-0.58	Violent deaths	-0.14
Population density	+0.14			Women employed	0.19	Vines	0.11
Mult R = 0.865		Mult R = 0.87		Unemployment	0.29	Education	0.27
R <sup>2</sup> = 0.75		R <sup>2</sup> = 0.75		Tertiary empt.	-0.29	Market gardens	-0.14
Constant= 130.12		Constant= -448.73		Mult R = 0.779		Mult R = 0.92	
				R <sup>2</sup> = 0.61		R <sup>2</sup> = 0.85	
				Constant= 10.87		Constant= -2.61	

R<sup>2</sup> coefficient of multiple determination

F values >4

T values significant 0.15% or more.

likely that both these hold a key to the growing complexity of the migration situation. By 1970 there is a definite movement away from areas of population density and from its associated social, and agricultural characteristics. However there is a movement towards areas of high social amenities (housing, education) and to agricultural areas of cereals, market gardens, vines, indicating the dominant importance of movement away from the Parisian centre to the suburban areas of the wider Paris basin, and of inter-regional movement to Provence.

The spatial pattern has altered as migrants now move away from urban areas and older industrial areas. The regression analysis also suggests a changing causation from a movement impelled by population pressure, agricultural change and employment structure, to a migration dominated by more attractive social conditions, a free movement for a better 'quality of life'.

