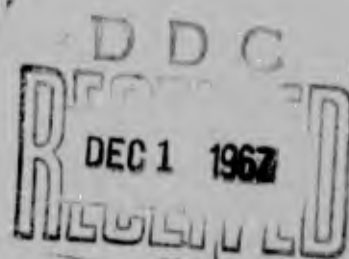


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HIGH LATITUDE FRINGES OF SETTLEMENT

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1967

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Part I

INTRODUCTION

Foreword

As the number of the world's people burgeons upward from 3.3 billion in mid-1965 toward the expected 7.4 billion in the year 2000 a geographic location of this additional population has to be anticipated. Most probably will locate in the presently inhabited areas and a majority in cities. But not all. Unless prohibited, some people will go to presently unoccupied land and, just as certainly, one of these regions will be the Northern Lands. One may feel that this movement is unwise but whether or not governments openly sponsor new rural settling it is simply inevitable in places like northern North America (Norman) and parts of Scandinavia and Finland (Norden). There we will see a new population locating itself for purposes of agriculture, forestry, mining, recreation, or military development. In North America we still live with the inherited tradition of freedom to expand settlement, northward if no longer westward. Further, we have and will have persons who are restless, imaginative, and hopeful of increased incomes, if not windfalls, in untried areas. Alaska and northern Canada still have a magnetism; people will continue to go there and try to settle so long as they are allowed. The numbers may be relatively small, perhaps a few thousands, but they are human beings and they will certainly need help. My concern is to provide some of this aid - for those persons bound to go - but it is not my desire to encourage anyone in doubt about or opposed to going into presently unoccupied land in any latitude. Still, inner forces will

compel or others will encourage some people to move (this is the story of the world). When they do both they and the governments involved will usually find that the guides they need for new rural settling are either scattered in a wide variety of literature, they are unrecorded but available orally in various locations, outdated, or just non-existent. Geographic analyses can lead to useful thinking and conclusions and they are applied here to prepare for what is likely to be needed in Normam and elsewhere.

But where will the new settlers go? The most accessible of the better agricultural areas all ready are occupied. The larger known mineral deposits which can be reached economically are being worked. Suitable and geographically favorable forests are being developed. In fact, some areas which are less than best in accessibility or quality of resource are now inhabited. Thus, new settlers generally are experiencing difficulty in finding areas which are both accessible and suitable for one or more occupations to support permanent settlement at the present stage of technological development.

Also, what procedures may they use so that the settlement usually will not be wasteful in people, money and time? Where may settlement planners obtain guides for any new efforts to occupy land for the first time? Especially in Alaska and northern Canada our experience has been too short in time and too limited in space to prepare dependable recommendations on all settlement procedures, yet these two areas are said to hold much promise and they certainly have only a few inhabitants now.

One way that we may develop guides is to use experience from an area which is similar but which has a relatively long history of being occupied. Such is Norden (the Scandinavian States and Finland). There high latitude areas have been occupied continuously for more than a thousand years. There, too, have taken place since about 1920 both rapid and slow advances by settling of uninhabited areas as well as partial and complete abandonment of some settled areas. Further, Norden is geographically somewhat like Alaska and part of Canada in being at the northwestern corner of a continent. But, of course, there are differences. The Scandinavian peninsula is only 450 to 900 miles away, but several types of all-weather bulk transport, from the great supply and market centers of the northwestern Europe; Alaska and northern Canada are much less favorably located. There are also differences in standards and basic values of living, total values of known resource bases, occupational procedures, and locally, physical characteristics of the land. However, in spite of these differences and because of the similarities (both discussed in Part V) Norden is an example of the kinds of futures possible.

Objectives

It should be clear that the principal objective of this work is to transfer rural settling experience from Norden to Normandy. That is to say, to learn from older countries what to do in somewhat similar and newer countries. But there are other purposes, too. The first was the training of some younger geographers to become specialists in the complex and much-needed research underlying planning for settlement.

Second is the strengthening of relations between Nordenic and Normanic geographers, people who have so much in common and so much to offer each other. On each of these objectives we have made a beginning - but only that.

The topical focus of this study is new rural settling. Interest is in the movement of settlers to uninhabited or discontinuously settled land because of the greater difficulties imposed by high and differing degrees of isolation and by lack of experience. There is an apparent great need for guidance (not paternalistic direction) of the very first settlers in an area. Once procedures of settling are clear for them, it also is possible, and probably easier, to prepare for additional settlers in partly inhabited places where there is, at least, some experience and less isolation. For somewhat similar reasons we concentrate on rural, rather than urban, forms of settlement. In addition, the rural forms usually develop first and necessitate working with larger areas. It is in the first stages of rural settlement where instability is greatest, so much help is needed, and, perhaps most important, the challenge is greatest to me for both practical and theoretical values.

Many of these objectives converge on measures of the permanence of rural settlement. These are elusive. Although mathematical values can not be assigned to a single measure, at least as yet, still there are significantly different degrees of permanence that may be recognized. Especially is this true in the analyses of the geographic factors of regional isolation and local isolation of an area. Any measure of these in a region like the Northern Lands will be helpful

to both practical and theoretical considerations of population. Though much emphasis is given here to the problems faced by rural planners such practical topics are at least equalled in my thinking by the more theoretical ones. Still, there must be some selection and one works on areas and topics primarily because of interest. Mine are rural settling, the edges of the inhabited world, and the people in both. These interests were first recognizable during field work in Kentucky and New York in 1935, became strong during a study of artificial drainage in relation to settling in Michigan's "Thumb" during 1937-1941, and reached the overwhelming stage in 1941 when I at last got to Alaska and started investigating the settling process in what has become a beloved Matanuska Valley. Since then the interest has grown fast, work has progressed through the Northern Lands and in the past decade has spread to rural settling and settlement throughout the world. For the pleasure of working on my major interest I am grateful but under these circumstances must be cognizant of the possibility of rambling discourse. Thus, an attempt has been made at a "tight" organization.

Organization

The material herein is presented in five parts. Although the arrangement of them is logical it is admittedly somewhat undesirable because so much foundation is necessary to attain the principal objectives reached in the last part. It is too much like a detective story. However, the mere mention of the words "new settling", at least in North America, usually causes immediate, automatic, and sometimes unconscious assumptions which negate the possible value of work

like this. Thus, it is to protect the reader against faulty assumptions that the beginnings deal with the conceptual bases and methodology of classification in the geography of rural settling. Then the geographical foundation is necessary so the regions and zones of similarity in Norden and Normam are presented in order that experiences may be exchanged between like areas. Only after these steps can recommendations be made about new rural settling procedures on the northern fringes of the inhabited world. And, once again, this is only a start.

Acknowledgements

A project such as this is dependent in part on comparative field observations over a period of time. The start on the Alaskan part in 1941 was followed by further study there and in Canada in the summers of 1946, 1948, 1951, and 1952 as well as the winters of early 1958 and early 1959. The Nordenic portion was begun in the period of August 1955 to September 1956, was continued in the summers of 1958, 1959, 1960, 1962 and 1964 and in each of these was supplemented by research elsewhere in Europe.

These observations required a great deal of support. I acknowledge this aid to show my deep gratitude, in order to demonstrate that many others have contributed, and so that persons interested in the subject or area may learn where they also might find encouragement. Of the organizations aiding, the principal one was the Geography Branch of the Office of Naval Research with considerable supplementation by the U. S. Educational Foundation Offices (the "Fulbright Offices") in Norway, Sweden, and Finland, the Universities of Wisconsin and Georgia,

the Social Science Research Council of New York, the U. S. Bureau of Land Management, the Arctic Institute of North America, and the Association of American Geographers.

Major help has been provided by many persons. I am proud of my wife, Vera, and our daughter, Marty, for their patience and understanding when our family life was sacrificed during the several periods of field observation. They deserve special mention for the trials attending our first year in Norden when it was necessary to live in quite a different, if not inconvenient, way; yet they, like I, developed a deep personal affection for and strong scientific interest in all of the Nordenic countries and their wonderful people. I wish it was possible to name each person who helped, from those who struggled during interviews with my home-made and poorly compounded spoken "Scandinavian" to those who smilingly gave days of time or provided generally unobtainable statistics, maps, and air photos and offered so much food, shelter, and encouragement. For one with no Nordenic blood ties or background I could not have even hoped for what was so unselfishly given. All these people are humbly thanked before naming a selected and representative few without whom the work really could not have been done. In the United States these are Dr. Louis O. Quam and Miss Evelyn L. Pruitt of the Office of Naval Research, in Norway Professor Fridtjov Isachen of the University of Oslo and Mr. Erling Kristiansen of Bennett's Reisebureau; in Sweden Professor William William-Olsson of Stockholm's Handelshögskolan and Direktor Per Porenus of Lantbruksnämnden in Västernorrland Län; in Finland Professor Helmer Smeds of the University of Helsinki and Deputy Director Iova Saarinen

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To these I gratefully add the names of geographical colleagues who unselfishly assisted on the project. They are, by date and place of service (and undergraduate institution):

- 1958-59: W. K. Johnson, Wisconsin and Norway, (Univ. of Utah)
G. E. Norling, Wisconsin and Norway, (Uppsala Univ., Sweden)
1959-60: M. H. Aamodt, Wisconsin, (Brigham Young Univ.)
K. V. Abrahamsson, Wisconsin and Sweden, (Univ. of Helsinki,
Finland)
P. D. Keddie, Wisconsin, (Univ. of Manitoba)
1960-61: H. Aldskogius, Wisconsin and Finland, (Uppsala Univ., Sweden)
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J. Wolpert, Wisconsin and Sweden, (Columbia College, N. Y.)
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1963-65: D. R. Every, Wisconsin, (Univ. of Wisconsin)

Throughout these eight years continuous cooperation was appreciatively received at the University of Wisconsin from Dean R. B. Doremus, my departmental colleagues, Mrs. Mary Jane Johnson and her secretarial staff, and Professor R. D. Sale and his Cartographic Laboratory workers. Equal aid has been given at the University of Georgia by Mrs. Hazel Henderson and her secretarial staff during the preparation of this final report.

Of course, all errors are my responsibility. In the text are specific references to known omissions which require study to provide both details and generalizations basic to this project. However, what is not specified is the great need for research in the fields adjoining the geography of fringe settlement. Especially desirable is joint research in the sociologic, psychologic, anthropologic, economic, historical, political, and agricultural characteristics of fringe settlement along with the geographic. It often seems that interdisciplinary relations are more easily seen in regions of fringe settlement than in old and densely inhabited areas - certainly these relations must be thoroughly understood to guarantee the permanence of any new settlements in the present-day or future world. A fascinating challenge is there. May I hope that these words present the stimulation in it and excite the curiosity of others?

Kirk H. Stone

Athens, Georgia
January, 1967

Part II

BASIC CONCEPTS

A Special Tribute to the Sponsors' Patience

Sponsors of academic research are well known for their patience. It is essential because they gamble on both the content of a project as well as its author. And the hazard is greater the longer the initial phase of the work is. But by all counts this report is about four years overdue. The tardiness is the result of a calculated risk; though easily explained by two circumstances it is a source of deep concern and embarrassment to me - yet I would have to take the same chance if I had it to do over again. A brief recounting makes clear that the delay is a result of my lack of pre-field preparation and planning. May it help guide others.

The project was originally conceived during 15 months of field work in Norden in 1955-56. It was developed during another year's intensive planning and study. When approved by the Geography Branch of the Office of Naval Research the plan was for three years of data gathering and training of young geographers; long before the end of that it was clear that the acquisition of information needed a fourth year. That was generously granted by O. N. R. and extended this stage of the work to June 1962. The University of Wisconsin was then deeply involved also.

Preparation of the final report was begun in 1962. Most of the maps were compiled, drawn, and reproduced within a year. Manuscript for three of the separate chapters on the four Nordenic countries was written and outlining of two chapters on the Normanic part was in detail. Slowly it became clear, however, that the geographic character of the

work was missing. Although a large and complex area (some said early that it was too large and too complex a project) was under investigation there was repeated stumbling over the basic concepts of the geography of rural settling. I simply could not place this work in its proper scholastic niche or, to put it another way, I did not know the work of my geographical antecedents in rural settling analysis as I should have. To risk shallowness was impossible.

Thus, late in 1962 the writing was shelved temporarily to investigate the fundamental literature of the field. Upwards of 10,000 references in about 20 languages needed to be sorted, sampled, and analyzed. Rather quickly it became apparent that the field had foundations on unsupported hypotheses. Further, terminologically there was a thin skim of apparent agreement over a bottomless pit of mixed and contradictory uses. These discoveries only meant more searching because bases for agreement were necessary - fun for the scholar to dig but time consuming and patience straining. Not until two years of concentrated study by myself, several graduate students, and special translators could I feel certain that the main lines of agreement and disagreement about theory as recorded in the literature were clear. Even then a feeling of uncertainty remained so the tentative chapter one was published to test the results of the work. The sum of the reactions has been that we are on the right track: the philosophical bases of the geography of rural settling grew from the large-scale studies by a few western European geographers, there never has been international agreement about concepts, and accord throughout the

profession on concepts now is dependent upon simple arbitration, by rural settlement specialists from the major groups of geographers throughout the world. (On this we are working.)

Meanwhile, discoveries of terminological weaknesses paralleled those of conceptual impotence. Scholastic logic dictated that each had to be strengthened. The bases of chapter two were made into a paper which was read to colleagues in Canadian and American universities and at conventions. There went another year. Now much refinement is still necessary but the foundations that should have underlain the start of the work are sufficiently strong that chapters one and two can be presented provisionally so the report may have a degree of completeness that the sponsors deserve.

In addition to the intellectual reasons for delay there has been a physical cause also. After 19 pleasant years at the University of Wisconsin we were attracted to the University of Georgia just when the conceptual and terminological weaknesses were becoming clear. The confusion attending the move (and subsequent construction of a home) prolonged postponement.

None of the above is offered as an excuse. Very simply, I found an unanticipated weakness and had to repair it. The explanation is my way of expressing special appreciation to the Office of Naval Research and the University of Wisconsin for a lengthy test of their belief as well as the University of Georgia for helping at the difficult final stage. All three have provided an unusual form of encouragement for which I am grateful. I hope the product justifies the faith so as to refurbish their patience with others.

Chapter 1

THE GEOGRAPHY OF RURAL SETTLEMENT

A reading of early geographical writings discloses that at least by the time of Caesar there was a recognizable subdivision of our field now called, in English, rural settlement. Yet, continued reading in that part of the field reveals further that through these 2000 years four fundamental weaknesses have continued to plague it. They are: 1) lack of international, and often national, agreement on what is the theme or central subject of rural settlement geography, 2) confused and incomplete basic terminology, 3) inadequate source materials, and 4) the absence of schemes for and application of international classification of the subject matter. That these weaknesses are still present is clearly evident in current bibliographies, literature and discussions. But they need not remain. National and international arbitration and research are possible. By careful and concerted efforts the gaps could be filled and geographical principles developed in the topic at a time when they are sorely needed.

Attention is directed here to the first weakness, defining the central theme of the field.¹ Effort is concentrated on the core or focus of the field, rather than its limits, because it is felt that the interdisciplinary nature of the topic (indeed, in most of science) requires delineation of only its focal point. Further, without clear recognition of the focus of the subject it is unlikely that a methodology can be developed that will lead to worldwide concepts.

Actually, the dwelling was the central object of settlement geography in earliest times. Since then work in the topic has strayed from this theme

and often returned to it. Even now major questions remain. For example, how much more, if anything, than the dwelling is part of the focus of the geography of settlement? What is meant by rural settlement? By settlement itself? At what scale are such studies to be conducted? And, as perplexing as any of these is another: whence come the answers? Dictionaries, geographical bibliographies, or specific studies? In numbers of works available our inheritance is rich² but in content there is great variation. Either the definitions are missing, they are so broad as to be vague, or the multiple uses of the same term lead to misunderstanding. So if there is neither etymological basis nor general usage to provide agreement it is essential to have arbitration in order to provide bases for comparative work at national and international levels.

Buildings

It is suggested that the central theme of the geography of settlement be the description and analysis of the distribution of buildings by which people attach themselves to the land. This specification assumes study may (or should) be made at scales from rather general to most specific (as noted in Chapter 2); certainly there is no restriction to large-scale study of individual buildings. Buildings are simply one representation of man-land relationships, they are a mapable part of the landscape to which attention needs direction, and they may be mapped at varying scales.

With this focus, the geography of settlement is a part of human geography (of the dichotomous human-physical division of the field). Stated otherwise, it is related closely to the geography of population but separated from it by scale of study; population geography is a smaller scale consideration than 1/500,000 and the geography of settlement is larger scale study

than that (Chapter 2). The basic objective of each is to describe where people are and to analyze why they are there. One focuses on groups of people represented by a symbol and the geography of settlement centers on only one or a few people using the single building represented by a symbol on a map. If the building is in a city the study is in urban settlement, otherwise it is rural settlement.

This suggested core of settlement geography is the buildings--where are they and why are they there? The focus is on dwellings for people: structures which are fixed, complete, solid, and permanent installations; but it also includes lean-tos, tents, huts, caves, fish and fur collection stations, woodcutters' barracks, barns, equipment sheds, storage structures, power generation units, mining units, service centers, and factories. Excluded as central subjects of settlement geography, but included whenever essential to the analysis of distributional patterns of buildings, are other elements of the landscape, such as, functions of people, fences, land use, and lines of circulation and communication. Still to explain completely why buildings are where they are will entail using all these other topics and more.

Settlement, Settling, Abandoning

Unfortunately, the word settlement is a general term and does not connote just a specialized scientific meaning. It has at least eight connotations. For geographical work lexicographers state it may mean either the place where one person or more dwells regularly or the act of establishing a permanent residence.³ Some geographers limit their use of the word to only a group of buildings. For clarity, settlement is used herein to refer to one or more buildings at a place but to no actions.

Further departures from the dictionary definitions are expedient. As noted previously, settlement is not limited to dwellings. Nor is it restricted to permanent ones. In the first place permanency is only relative.⁴ The degrees of permanency vary from a constantly-occupied but fixed-in-place stone hut of a native fisherman or log cabin of a woodcutter, to a year-around brick home of a farmer--the differences are in intensity of use but each building is related to primary production. Thus, the dictionary definition is extended here to include all buildings and both the permanent and temporary kinds.

In geographical literature, the term settlement has been employed to mean several things. These range from objects (a single small dwelling, a hamlet of perhaps six houses, or a metropolis) through a sense of action (the development of a porch on a house plan or a village's building-distribution pattern) to a technique of analysis as a part of historical geography. References with all these meanings are, of course, included in the general bibliographies on settlement where the breadth of meanings is purposely the greatest. However, throughout the history of the geography of settlement broad definitions of the field have predominated and distinctions between the form of settlement and process of settling have not been made clear (often times because there was no apparent distinction in the authors' minds).

Therefore, it is suggested that three phrases be specified as titles of the topical subdivisions of the geography of settlement. One is the form of settlement to designate the distributional qualities of buildings as discussed in Chapter 2; subdivisions of form may vary in scale or in time but the phrase is limited in concept to the primary geographic quality of

distribution. The second subdivision is the process of settling, to be limited to the action implied in the initial construction of buildings in an area. This is to be paralleled by a third phrase, the process of abandoning, to mean a decline in the number of buildings in an area (a need is recognized here for distinction between abandoned, unoccupied, and unusable). All three terms are used in this report as defined, and it would be useful if these distinctions could be employed internationally.

Rural, Country, Agricultural

Within the geography of settlement one needs to distinguish between the rural and urban parts.

Dictionary definitions of rural are generally unsuitable for separating this part of the geography of settlement from the urban section. Geographically rural is said to pertain to the country rather than a city or town and to refer to farming or agriculture,⁵ but country is ordinarily described as land with a few houses and whose population is supposed to be unsophisticated and simple.⁶ Some geographers have used rural to refer to people living in an administrative unit of either a certain maximum size or number of people, but these vary greatly and are changed from time to time. For example, in Denmark, France, U.S.A., Japan, Netherlands, and Korea rural communities are those with populations of less than 250, 2500, 10,000, 20,000, and 40,000, respectively and in England people living in a Rural District, regardless of population size, are so classified.⁷

Herein the focus of the geography of rural settlement is the description and analysis of the distribution of buildings by which people attach themselves to the land for purposes of primary production. The distinction is that rural means the predominance in a part of the world, measured in

area of use and number of people employed, for production directly from local resources by agriculture, forestry, mining, fishing, hunting, trapping, power production, or combinations of these. People in such usually live in separated single dwellings, in clusters, hamlets, or villages, but still in an area of largely primary production. The maximum size of a village is taken here to be 200 buildings; this is a preliminary estimate which hopefully will lead to international comparability until a more scientifically determined and universally acceptable measure has been demonstrated. On the other hand, urban settlement is considered here to be a larger group of buildings and one where secondary and tertiary production is dominant. Because cities have developed so rapidly in the past century urban study has understandably dominated settlement geography. But inasmuch as urban work seems to start with places of 20,000-25,000 population the pseudo-urban geography, that of places from 1000 to 20,000 people, is as much in danger of being overlooked as is the geography of rural settlement.

The central theme adopted here for rural settlement geography is a compromise. It includes elements from several definitions, from different uses by geographers and specialists in neighboring disciplines, and adjustments to modern conditions. The known stated or clearly interpretable definitions of the topic are summarized below in order to foster international agreement by emphasizing the recurring focus on buildings related to primary production.

German Settlement Geography

Descriptions of form of settlement date back to early recorded history. But settlement geography as a specific endeavor is a product of western European, particularly German and French, geographers of the 19th century.

It began, as did most human geography, with Ritter's work at the start of the 1800's. From Friedrich's bibliography,⁸ the first major one on settlement geography, it is clear that most of the earliest work was done by Germans on two main subjects: house type (including distribution, architecture, and building materials) and urban centers. Hettner followed Friedrich's distinction and noted that by 1840 geographers were investigating the relations between cities and the natural environment but that by 1860 the historical approach had developed to near-suffocating proportions.⁹ Ritter's theme of interdependence of all the elements of a landscape gave a broad base to this early geography of settlement.

By 1891 German research in settlement geography (Siedlungsgeographie) was developing. Milestones in the field were established in numbers during the last decade of the 19th century. A highly respected geographer, F. von Richthofen, gave major lectures in Berlin on general settlement (and commercial) geography in 1891 and 1897 and these were published later.¹⁰ 1891 was also the first year that a specific topic in settlement, called colonization, is known to have been used for a group of papers at an international geographical congress.¹¹

In 1895 the historian Meitzen published a four-volume classic which summarized work from 1768 on European rural settlement form, classified the settlements of eastern and western Germany, and set the emphasis on the form of villages which has characterized much of European rural settlement geography ever since.¹² Meitzen's classification was based upon the shape of settlements, especially villages, and his principal point was that the forms related to first permanent agricultural settlement have a direct and often major relationship to later forms; he was able to see the reflections

of different original cultural groups in early agricultural and village forms, especially in the area north of the Alps.

In 1899 Schluter became a leader in the field; in fact, he is said by some to have founded the geography of settlement.¹³ Schluter's definition of the field was broad: to location, size, and growth of settlements and their relationships to nature he added the study of internal structure, external form and appearance, and areal arrangement as well as historical, economic, and cultural conditions which included arbitrary choices by people.¹⁴ He distinguished between the form of settlement and the process of settling and was probably the first to state that in settlement geography the concern is with the phenomena that result from people's activities, not the people themselves. Schluter also emphasized urban geography in the 1899 work but went on seven years later to stress that settlement geography focuses on the residential relationship of man to land, that the groups of houses in villages and towns are important (not the single houses), and that the overall settlement, that is, the entire settlement network, is significant in opposition to the form and location of single towns or villages.¹⁵

In the meantime, Wagner noted that the dwelling is the core of every settlement and that the land used by inhabitants of the dwellings belonged to the settlement.¹⁶ He suggested classifying settlement as temporary (two types) and permanent; within the latter the village was subdivided into five types on the basis of shape and/or location. These emphases on residence and forms of village, house, and field were continued by Gradmann in another classic work in settlement geography.¹⁷ As a forester with many interests he worked from individual farmsteads to large groupings of

farms and by 1937 developed a concept that virgin forests were hostile to settling activities in the early occupance of central Europe.¹⁸

While emphasis in German geography continued on anthropo-geography during the second and third decades of the 20th century, the development of rural settlement geography was steady (and of the urban part rapid). One major leader was Köttschke who was especially interested in the historical changes of form.¹⁹ Another was Martiny who, in a classic study on 60 different forms of German villages, stressed morphology but also mapped some field patterns and types of buildings.²⁰ By the 1930's most German geographers were still defining their field in very broad terms. For example, Klute included form, the influence of man and the environment in creating the types, all dwellings excepting the most temporary, and buildings other than agricultural kinds.²¹ Another treated the topic broadly because it was forced to serve national problems in "settlement space research"²² where form and process were considered but the total was subordinated to the political concept of need for Germany's areal expansion. Others, like Christaller, named the study of human communities, especially the process of their development, as the core of settlement geography.²³

In 1957 confusion about German ideas of settlement geography was recognized openly.²⁴ It was felt that misunderstandings probably were due to the multiplicity of concepts and methods. Form of settlement and process of settling studied at all scales and mixed together could not help but produce some discord.

Still a multitude of objectives has been retained. In a recent German general geography the topic of settlement is recognized as temporary and

permanent, as rural and urban, and as basically the dwelling place but also the latter's relation to human economic needs.²⁵ And in Schwarz's book, one of three available on settlement geography,²⁶ the topic includes a range from the most temporary dwellings to the permanent and from rural to urban (including a unique section on that between the two), while rural settlement itself includes the study of man's use of plants and animals to procure food and clothing, the consideration of an economic area larger than the dwelling and the analysis of direct relationships between the economic area and the dwelling. The focus of rural settlement used in this report draws from Miss Schwarz the concept of attachment to land and defines the central theme of settlement geography as buildings but goes beyond agriculture to include all types of primary production. Of greatest importance methodologically here is the sharp definition of only the focus of rural settlement geography. Previous German definitions have demonstrated the imprudence of setting outer limits of the field. The premise here is that there is no outer limit of rural settlement geography nor, in fact, of geography or any other science (other than those set for administrative purposes).

French Settlement Geography

The German development was paralleled by some of that in French settlement geography. It began with work on house forms and building materials and progressed to emphasis on villages. But French developments also differed. In the early phases there were relatively few specialists, French geographers apparently had little concern for definition of the topic, and most of their concepts were narrower than those of the Germans.

Human geography in France was the same as anthropo-geography in Germany

in the latter 19th century. So the regional approach and the work of Vidal de la Blache influenced the early French settlement geography.²⁷ Its first leader, and a strong one for more than three decades, was Demangeon. His initial work, in 1905, had as objectives the fields, ownership, cultivation, house form, house material, and distribution of houses and villages and towns in part of northern France.²⁸ His term for settlements was les établissements, a logical one but interestingly not the primary term in French settlement geography thereafter. Still, others followed Demangeon's work as a guide until his article of 1920 in which the type and distribution of the dwelling was the principal subject.²⁹ Then, seven years later, he published one of the basic studies of the field; in it the principal distributional patterns of rural houses were described for major parts of the world, probably for the first time in one reference.³⁰ The classification included the relative location of farm dwellings to each other, from dispersed through intercalaire to agglomerated, as well as to their fields (e.g., "the village of contiguous fields"). He used the words l'habitat rural, a term employed in French settlement geography ever since and, for a time, internationally.³¹ But not even Demangeon's concern for classification in different areas was enough to detract attention from definition; by 1936 another French geographer was trying to define rural settlement by combination of the shape and size of dwellings, the function of the inhabitants (including non-agricultural functions classified as rural), and population density.³² Still, only two years later French settlement geography was said to be limited to the study of form, especially the dwelling as part of the landscape, making the topic much more restricted than it was in Germany at that time.³³

More modern French definitions of rural settlement have been broader. In each, the dwelling is essential; for many only agricultural types are considered. One leader stipulated the rural habitat was not exclusively the house³⁴ while another called the dwelling the tangible form of human occupation and a reflection of all of the ways of living in an area.³⁵ Most recently the rural habitat was said to mean inhabited space and the study of habitat itself was designated as analysis of the arrangement of these inhabited spaces.³⁶ Thus, recent French definitions have tended to be more inclusive and to resemble German geographers' concepts.

Belgian Settlement Geography

Demangeon's influence extended to Belgium via an early student from there, Marguerite Lefèvre. She has, between 1921 and 1964, steadily made invaluable contributions in general definitions and classifications as well as with analyses of Belgian distributions. Her focus has been on the house in the agricultural landscape; an early work in 1926 centered on distributions, densities, and types of Belgian dwellings as an example of their significance to rural settlement analysis.³⁷ In 1929 Halkin registered concern that l'habitat rural had not been defined exactly and that a definition was needed; he suggested that the term be the equivalent of the house of residence and that the houses be studied as to distribution, density, and type.³⁸ At about the same time Miss Lefèvre suggested that rural habitat be reserved for the residences of persons who worked the soil.³⁹ In 1931 Demangeon agreed with her that rural habitat should mean farm houses, and that industrial buildings in a rural situation constituted a dispersed urban habitat.⁴⁰ Then Miss Lefèvre specified that the classification of habitat

originated with functional analysis so as to separate rural (the agricultural) from urban (the commercial or industrial).⁴¹ Later she defined habitat as of wide range (from an Eskimo igloo to a large metropolis) and settlement geography to include origin, distribution, function, age, type, architecture, nature, and development of the structures.⁴²

More recently Miss Lefèvre reduced the purpose of settlement analysis to the definition, classification, and explanation of the regional distribution of house types.⁴³ Her stress has been on the morphologic classification of the dwellings, well illustrated in the latest work,⁴⁴ and the process of settling has been included as part of the analysis of form of settlement. In general, then, she represents another world leader in this work who has returned time and again to the dwelling as the central theme.

Settlement Geography Elsewhere

In other parts of the world the geography of settlement has been defined variously and has developed unevenly. Austrian geographers, like Hassinger, worked closely with the Germans from the first and had similar concepts.⁴⁵ Auroousseau, an Australian, called rural settlement the arrangement or characteristic grouping of dwellings although he also recognized three degrees of dissemination.⁴⁶ From Norden then came two studies. One emphasized process in an urging to study settlements as geographical entities in regions (which were based on climate or landforms) and it was suggested that evolutionary stages could be delineated in the study of form, grouping, location, and development.⁴⁷ The other was a classic example of Finnish settlement regions delineated by Granö from

analyses of form and location of rural dwellings and hamlets, as well as urban settlements.⁴⁸ By 1932 there had been so much difference in the uses of several terms that a Spanish geographer concluded that after six years of international collaboration the study of the rural habitat was scarcely outlined.⁴⁹ Even much later, this complaint seemed correct when a Czechoslovakian colleague placed the stress on work with universal validity, its value as applied geography, and on a settlement unit composed of the dwelling, farm premises, and the land on which its inhabitants lived.⁵⁰

In England early geographical research on rural settlement centered on house types, the morphology of villages and field patterns as well as the historical origins of each. These are included in Houston's recent statement that settlement geography's focus is the delimitation of settlement patterns and the explanation of their origin.⁵¹ However, a Turkish settlement geographer differed by noting that the house was the principal feature of settlement and that the term included dwellings and "...all other buildings fulfilling the requirements of commerce, industry, military defense, culture and entertainment".⁵² Further, he restricted consideration to permanent agricultural settlements under the term rural and placed the emphasis on form. Nearby, in Hungary, settlement geography appeared to be centered upon form also, starting with the details of house type and including very great emphasis on urban concentrations.⁵³ Meanwhile, a Polish geographer recently asserted that the definition of a village and the topical coverage of detailed research on specific places have been expanded in recent works in settlement geography, especially those done in France, Germany, and Sweden.⁵⁴

In contrast to all this European activity, only one definition of

settlement geography is known to have been published in English by an Asiatic geographer. In it the house is recognized as a fundamental concept in human geography but the topic is defined so broadly as to include all facilities related to the occupying of an area.⁵⁵

In American geography there have been few definitions of settlement geography. Work in the urban part began in 1855 and really started to develop after 1900.⁵⁶ Attention was first focused on the rural aspects at meetings in 1925 when Bowman's "science of settlement" was said to be an inter-disciplinary study of how to develop "the pioneer belts" of the world.⁵⁷ This process of settling remained the major interest from then through the depression of the 1930's although publication on form, considered broadly, began in 1931 with Hall.⁵⁸ This was narrowed in 1936 by Trewartha's statements that geographer's concerns were house types and "...the characteristic grouping and arrangement of these buildings into colonization or occupancy units called settlements"; the term house meant all human structures where people congregated or stored their goods and included factories.⁵⁹ He somewhat redefined the settlement unit in 1942 as "...an organized colony of human beings together with the buildings in which they travel".⁶⁰ Immediately thereafter, he demonstrated the inclusion of the process of settling in his research publications.

In the early 1950's other American definitions of the geography of settlement returned to the very general status. One declared the topic dealt "...functionally with the character and arrangement of the works of man".⁶¹ A committee stated that such study had "...to do with the facilities men build in the process of occupying an area".⁶² This was reduced somewhat by another committee in 1956 which wrote "...rural settlement patterns

comprise characteristic combinations of roads, fields, buildings, and other features of human occupancy, as well as agricultural villages.⁶³ By then, as in many countries, geographical interest in rural settlement was being overshadowed by urban analyses and, definitions, if any, went unpublished.

It is worthy of emphasis that as recently as 1947 only nine American geographers listed themselves as specialists in the geography of settlement.⁶⁴ One of these, Kniffen, stated in 1965 that "In America, settlement geography has somehow failed to find equally widespread acceptance" as in Europe.⁶⁵ He chose to concentrate on house and barn types in one major article on the spread of American occupancy⁶⁶ but demonstrated a wider interest even more recently by writing "If the geography of settlement is ever to reach its full potential as the interpretable record of the historical events and cultural processes, the components of settlements of all kinds must be systematically reduced to types and quantities before they are set against the revealing vagaries of reality".⁶⁷ Still American geographers go on with obvious disparity in meanings of rural settlement.

From elsewhere in the world no formal published definitions of settlement geography are known. In many areas definitions are lacking because of the apparent youthfulness of the topic among local geographers, as in the Soviet Union,⁶⁸ Latin America, and South Africa. In others, like Norden, Latin America, Japan and Australia, primary efforts have been in substantive work. But throughout the world, settlement geography is plagued by a lack of definition, by weaknesses in basic terminology, by few textbooks, and by so little formal instruction in the subject.

Conclusion

However settlement geography has been defined by any geographer, the international results have been rather inadequate for the part covering the rural sector. Definitions and bibliographies usually have been very broad, usually as a result of concern about the limits rather than the central theme of the topic. Also, the ways geographers have used the term rural settlement mirrors this breadth to a point of gross confusion; settlement has been employed to mean a range from a broad geographical history to a detail of house construction or a local custom. This variety has been surveyed to demonstrate the need and basis for agreement on a focus so as to encourage international comparisons and, especially here, to prevent misunderstandings by a reader. But the survey has also disclosed the recurring theme concerning buildings.

Rural settlement geography's focus as used herein is description and analysis of the distribution of buildings by which people attach themselves to the land for the purposes of primary production. The specific restriction to buildings is made because geographical literature has gotten so large and research methods have become so specialized that particularizing can be afforded--in fact, is needed--for ease of approach to the work and clarity of theoretical and applied results. But the suggested core theme is expanded beyond the agricultural focus of most. This is because in much of the world rural inhabitants commonly combine agricultural occupations with other types of primary production. Thus, the designation of rural is dependent upon location in an area of the first stage of production of goods and the focus on buildings is to provide for this part of geography a clearly definable and mappable subject which is an expression of man-land relationships presently inadequately studied and known.

Footnotes

1. This chapter was first published as Stone, K. H., The Development of a Focus for the Geography of Settlement, Economic Geography, v. 41, 1965, pp. 346-355. The present form includes revisions and additional material as well as several suggestions from colleagues; particularly helpful among the latter were Instructor John Tuck, Jr. of the University of Georgia, Professor R. G. Smith of the University of North Carolina, and Professor Geoffrey Ironsides of the University of Alberta at Edmonton.

2. The principal bibliographies on the geography of settlement are:

- American Geographical Society of New York, Research Catalog of the American Geographical Society, Boston, classification 5.
- Bercaw, L. O., Hannay, A. M., and Colvin, E. M., Bibliography on Land Settlement, U.S. Dept. of Agri., Misc. Publ. No. 172, Washington, 1934.
- Bercaw, L. O. and Hannay, A. M., Bibliography on Land Utilization, 1918-1936, U.S. Dept. of Agri., Misc. Publ. No. 284, Washington, 1938.
- Berry, B. J. L. and Pred, A., Central Place Studies, A Bibliography of Theory and Applications, Biblio. Series, No. 1, Regional Science Research Inst., Philadelphia, 1961.
- Broun, A. E., Land Settlement, Intern. Inst. for Land Reclamation and Improvement, Wageningen, Netherlands, 1960, mimeo.
- Dörries, H., Siedlungs- und Bevölkerungsgeographie (1908-38), Geographisches Jahrbuch, v. 55, Erster Halbband, 1940, pp. 1-380.
- Friedrich, E., Die Fortschritte der Anthro-po-geographie, Geographisches Jahrbuch, v. 31, 1908, sections 3 and 4, pp. 440-461.
- Geographical Branch, Dept. of Mines and Technical Surveys, Colonization and Settlement in the Americas, A Selected Bibliography, Ottawa, Canada, 1960.
- Hannay, A. M., Land Settlement, A List of References, U. S. Dept. of Agriculture, Libr. List No. 9, Washington, June 1944, mimeo.
- University of Wisconsin Land Tenure Center Library, Annotated Bibliography: Colonization and Settlement, Madison, 1964, duplicated.

In addition, there are extensive bibliographies in the following references devoted to, or with major parts on, the geography of settlement:

- Broun, A. E., Land Reclamation, Intern. Inst. for Land Reclamation and Improvement, Wageningen, Netherlands, 1960, mimeo.
- Brunn, S. D., Bibliography of Publications in English on the Geography of Rural Settlement in Anglo-America, Dept. of Geography, Ohio State University, 1964, mimeo.
- Denman, D. R. et.al., Bibliography of Rural Land Economy and Landownership, 1900-1957, Cambridge, England, 1958.
- Edelman, C. H. and Eeuwens, B. E. P., Bibliography on Land and Water Utilization and Conservation in Europe, F.A.O., Rome, 1955, mimeo.
- Eldridge, H. T., The Materials of Demography, New York, 1959.
- F.A.O., Bibliography on Land Tenure, Rome, 1955.
- Forsyth, W. D., The Myth of Open Spaces, Melbourne and London, 1942, pp. 210-220.

- Goodsell, O. E., Land Classification, A Selected Bibliography, U. S. Dept. of Agri., Washington, March 1940, mimeo.
- Hannay, A. M. and Gooch, D. W., Land Ownership, A Bibliography of Selected References, U. S. Dept. of Agriculture, Biblio. Bull. No. 22, Washington, 1953.
- Intergovernmental Committee for European Migration, Agricultural Emigration from Europe, 1920-1961, A Bibliography, Geneva, 1962, mimeo.
- _____. Migrants and Refugees, A Bibliography on Legal Matters, Geneva, December 1961, mimeo.
- _____. The Motivation of Migration, Geneva, June 1961, mimeo.
- Jones, E., Human Geography, London, 1965, especially Chapter 6.
- Lefèvre, M. A., L'Habitat Rural en Belgique, Liege, 1926, pp. 290-298.
- Mendol, T., Altalanos Telepulesfoldrajz. (General Settlement Geography) Budapest, Hungary, 1963, pp. 513-531.
- Petsch, A., Auszug aus der Literatur uber Raumforschung, Raumordnung und Landesplanung 1959, Raumforschung und Raumordnung, 18 Jahrgang, Heft 2-3, 1960, pp. 172-187.
- Population Association of America, Population Index, quarterly, especially items C, H, and I.
- Schwarz, Gabriele, Allgemeine Siedlungsgeographie, Berlin, 3rd Edition, 1966, pp. 622-693.
- Stevens, P. H. M., Town and Country Planning in Tropical and Sub-Tropical Areas: A Bibliography, Department of Scientific and Industrial Research, Watford, England, May 1958, mimeo.
- van Baak, B. C. P. H., Land Reclamation and Improvement, Intern. Inst. for Land Reclamation and Improvement, Wageningen, Netherlands, 1961.
- Zelinsky, W., A Bibliographic Guide to Population Geography, Univ. of Chicago, Dept. of Geography, Research Paper No. 80, Chicago, 1962.

3. Gove, P. B. (ed.), Webster's Third New International Dictionary, Springfield, Mass., 1961, p. 2079; Funk and Wagnalls, New Standard Dictionary, New York, 1964, p. 2239. It is clear that many encyclopedias emphasize the settling action when describing the term "settlement" or "land settlement" as in The Encyclopedia of the Social Sciences, New York, 1933, v. 9, pp. 53-64, (by E. Mead).

4. How can one be certain, for example, of permanency into the future? Some of the earliest Nordenic settlements occupied continuously for several centuries are now being abandoned. Measures of permanency of settlement are, at best, incompletely known. Examples of abandonment and of attempts to determine at least general measures of permanence are noted in Stone, K. H., Alaskan Group Settlement: The Matanuska Valley Colony, U.S. Department of the Interior, Washington, 1950 and Stone, K. H., Swedish Fringes of Settlement, Annals, Association of American Geographers, v. 52, 1962, pp. 373-393.

5. Lefèvre, M. A., Habitat Rural et Habitat Urbain, Bulletin de la Société Royale Belge de Géographie, v. 52, 1928, pp. 113-121; Schwarz, G., Allgemeine Siedlungsgeographie, Berlin, 2nd edition, 1961, pp. 31-32; Gourou, P., Precis de Géographie Rurale, Paris, 1963, pp. 165-167.

6. Gove, op. cit., p. 1990.
7. Monkhouse, F. J., A Dictionary of Geography, Chicago, 1965, p. 267 and Beaujeu-Garnier, J., Geography of Population, London, 1966, p. 13.
8. Friedrich, E., op. cit.
9. Hettner, A., Die Lage der menschlichen Ansiedlungen, Geographische Zeitschrift, v. 1, 1895, pp. 361-375.
10. F. von Richthofen, Vorlesungen über Allgemeine Siedlungs- und Verkehrsgeographie, edited by O. Schluter, Berlin, 1908.
11. The Berne, Switzerland Congress of 1891 described in E. Meynen (ed.), Orbis Geographicus, 1960, Wiesbaden, 1960, p. 68.
12. Meitzen, A., Wanderungen, Anbau und Agrarrecht der Völker Europas nördlich der Alpen, Erste Abtheilung: Siedelung und Agrarwesen der Westgermanen und Ostgermanen, der Kelten, Römer, Finnen und Slawen, Berlin, 1895, (3 volumes and atlas). It is interesting to note that Meitzen was a surveyor with a great concern for history.
13. Fochler-Hauke, G., (ed.), Allgemeine Geographie, Frankfurt, 1959, pp. 286-311, ref. p. 287.
14. Schluter, O., Bemerkungen zur Siedlungsgeographie, Geographische Zeitschrift, v. V, 1899, pp. 65-84.
15. Schluter, O., Die Zeile der Geographie des Menschen, Berlin, 1906, passim.
16. Wagner, H., Lehrbuch der Geographie, Hannover, 1900, pp. 752-789.
17. Gradmann, R., Siedlungsgeographie des Königreichs Württemberg, Stuttgart, 1914.
18. Gradmann, R., Zur Siedlungs Geographischen Methodik, Geographische Zeitschrift, v. 43, 1937, pp. 353-361.
19. Köttschke was a prolific writer. His important works in this period are listed in Dörries, op. cit., pp. 7-10. Especially to be noted is the tribute to him, Festschrift für R. Köttschke: Deutsche Siedlungsforschungen, Leipzig, 1927.
20. Martiny, R., Die Grundrissgestaltung der deutschen Siedlungen, Petermann's Mitteilungen Ergänzungsheft Number 197, Ergänzungsband 43, Gotha, 1928.
21. Klute, F., (ed.), Die Ländlichen Siedlungen in Verschiedenen Klimazonen, Breslau, 1933, pp. 7-12.

22. Busch-Bonn, W., Wege und Ziele der Siedlungsforschung, Der Forschungsdienst, v. 3, 1937, pp. 187-199.

23. Christaller, W., Siedlungsgeographie und Kommunalwirtschaft, Petermann's Mitteilungen, v. 84, 1938, pp. 49-53.

24. Hövermann, J., Über Methoden und Probleme der Siedlungsgeographie, Die Erde, v. 88, 1957, pp. 120-127.

25. Fochler-Hauke, G., op. cit., pp. 286-311 (by G. Glauert).

26. Schwarz, G., op. cit., Mendöl, T., op. cit., and Houston, J. M., A Social Geography of Europe, London, 1953, 1963.

27. Vidal de la Blache, P., De l'Habitation sur les Plateaux Limoneux du Nord de la France, Congrès International de Géographie de Berlin, Deuxieme Partie, Berlin, 1899.

28. Demangeon, A., La Picardie et Les Régions Voisines, Paris, 1905, pp. 333-398.

29. Demangeon, A., L'Habitation Rurale en France, Annales de Géographie, v. 29, 1920, pp. 352-375.

30. Demangeon, A., La Géographie de l'Habitat Rural, Annales de Géographie, v. 36, 1927, pp. 1-23, 9--114.

31. Demangeon's influence in settlement geography certainly was international for it was he who stimulated the formation of the first International Geographical Union Commission de L'Habitat Rural at the International Geographical Congress in Cairo in 1925 and he was its first chairman. The group was very active, produced many useful reports, and stimulated a start on internationally cooperative research which is needed more than ever at the present time.

32. Cavaillès, H., Comment Définir L'Habitat Rural? Annales de Géographie, v. 45, 1936, pp. 561-569.

33. Christaller, op. cit.

34. Sorre, M., Les Fondements de la Géographie Humaine, Paris, 1952, Tome III, p. 91.

35. Tricart, J., Cours de Géographie Humaine, Paris, 1949, Fasc. I, L'Habitat Rural, p. 2.

36. Derruau, M., Precis de Géographie Humaine, Paris, 1961, p. 321.

37. Lefèvre, L'Habitat Rural...., op. cit. The whole book is exemplary of her general concepts as stated on pages 1-5. It should be noted that industry is included as a separate classification on the summary map (p. 284) and in the summary table (p. 285) but perhaps this was for completeness of coverage.

38. Halkin, J., Questions d'actualité géographique. II: Habitat rural, Cercle de géographes Liégeois, Luttich, v. IV, 1929, p. 221.

39. Lefèvre, M. A., Habitat Rurale et..., op. cit.

40. Demangeon, A., Troisième Rapport de la Commission de L'Habitat Rural, Intern. Geogr. Union, Florence, Italy, 1931, pp. 37-38.

41. - Lefèvre, M. A., Les Genres d'Habitat, Definition de l'Habitat Rural et Urbain, Comptes Rendus du Congrès International de Géographie, Paris, 1931, Paris, 1934, v. III, pp. 223-229.

42. Lefèvre, M. A., Principles et Problemes de Geographie Humaine, Bruxelles, 1945.

43. Lefèvre, M. A., La Géographie des Formes de l'Habitat, Bulletin de la Société Belge d'Etude Géographique, v. 3, 1953, pp. 186-211.

44. Lefèvre, M. A., Modes de Peuplement Rural, Atlas de Belgique, Bauxelles, 1964, pp. 3-16 and Plaque 27.

45. Hassinger, H., Siedlungsgeographie in Klute, F. (ed.) Handbuch der Geographischen Wissenschaft, Allgemeine Geographie, Zweiter Teil, Potsdam, 1933, pp. 403-457.

46. Aourousseau, M., The Arrangement of the Rural Population in Picardy and Flanders, Geographical Journal, v. 51, 1918, pp. 393-394; and Aourousseau, M., The Arrangement of Rural Populations, Geographical Review, v. 10, 1920, pp. 223-240.

47. Ahlmann, H. W., The Geographical Study of Settlements, Geographical Review, v. 18, 1928, pp. 93-128, references on pp. 93-95.

48. Granö, J. G., Gehöfte und Siedlungen in Finnland, Fennia, v. 63, 1937, pp. 1-66. This work was closely related to the previous article on the geographical regions of Finland published in Fennia, v. 52, 1931.

49. Dantin Cereceda, J., I. Estado Presente de la Cuestión del "Habitat Rural", Boletín de la Sociedad Geografía Nacional, 1932, pp. 25-34, ref. on p. 32.

50. Král, J., Rural Settlements: Types and Classifications, Comptes Rendus du Congrès International de Géographie, Lisbonne, 1949, Lisbon, 1951, Tome III, pp. 472-477. His units of settlement, grouped into settlements, are classified in several different ways in J. Král, Zemepis eloveka, (Geography of Man), Praha, 2nd edition, 1946, Vol. II, pp. 50-178.

51. Houston, J. M., op. cit., pp. 80-81.

52. Tanoglu, A., The Geography of Settlement, Review of the Geographical Institute of the University of Istanbul, International Edition, 1954, pp. 3-27, quotation from page 4.

53. Mendöl, T., op. cit.

54. Kielczewska-Zaleska, M., Nowe kierunki studiów geograficzno-historycznych nad osadnictwem wiejskim (New Trends in Historical Geography of Rural Settlement), Przegląd Geograficzny, Vol. 35, 1963, pp. 3-19. I am grateful to Mr. and Mrs. Michael Blaicher of Milwaukee, Wisconsin for the translation of this excellent article.

55. Singh, R. L., Meaning, Objectives and Scope of Settlement Geography, National Geographical Journal of India, v. Vii, 1961, pp. 12-20.

56. James, P. E., C. F. Jones, and J. K. Wright (eds.), American Geography, Inventory and Prospect, Syracuse, N. Y., 1954, p. 144.

57. Bowman, I., The Scientific Study of Settlement, Geographical Review, v. 16, 1926, pp. 647-653.

58. Hall, R. B., Some Rural Settlement Forms in Japan, Geographical Review, v. 21, 1931, pp. 93-123; Hall, R. B., Rural Settlement Forms of the Monticello Quadrangle of Kentucky. Comptes Rendus du Congrès International de Géographie, Paris, 1934, Tome III, pp. 257-268.

59. Finch, V. C. and G. T. Trewartha, Elements of Geography, New York, 1936, pp. 615 and 620.

60. Ibid., 1942, p. 630.

61. Kohn, C. F., The Use of Aerial Photographs in the Geographic Analysis of Rural Settlements, Photogrammetric Engineering, v. 17, 1951, pp. 759-771, reference on p. 759.

62. James and Jones, op. cit., p. 125.

63. National Academy of Sciences-National Research Council, Committee to Select Topographic Quadrangles Illustrating Cultural Geography, Rural Settlement Patterns in the United States as Illustrated on One Hundred Topographic Quadrangles, Washington, 1956, p. 2.

64. Wright, J. K. and E. T. Platt, Aids to Geographical Research, American Geographical Society Research Series No. 22, New York, 1947, p. 282.

65. Kniffen, F., Folk Housing: Key to Diffusion, Annals of the Association of American Geographers, v. 55, 1965, pp. 549-577, reference on p. 549.

66. Ibid.

67. Kniffen, F. and H. Glassie, Building in Wood in the Eastern United States, A Time-Place Perspective, Geographical Review, v. 56, 1966, pp. 40-66, reference on p. 40.

68. Mints, A. A., Current State of Research on the Rural Population Geography in the U. S. S. R., Tijdschrift voor Economische en Sociale Geografie, v. 55, 1964, pp. 246-248.

Chapter 2

SCALE CONSIDERATIONS AND TERMINOLOGY¹

Part of our professional inheritance is varied objectives and confused terminology. Yet these might be expected after noting in Chapter 1 that the development of settlement geography has been so long in time, so varied in space, and so much by individuals rather than groups. Now disorder not only persists but is being augmented. This is evidenced by the very great variety of sub-topical items included in rural settlement bibliographies. It also shows in the varying uses of the same terms in modern publications. Further, there is a notable absence of any kind of an international classification of rural settlement as well as of continental maps. And it is often clear in current discussions that either the same things are not being talked about or that the terms can be defined only vaguely.² Thus, there is need for agreement on both the objectives of rural settlement geography as well as the terminology basic to it, especially to accomplish the international comparability so sorely needed.

Terminological Needs

It is helpful to recognize that terminological weaknesses are inherent in rural settlement geography. And for four good reasons. One is that conflicting uses of terms in rural settlement geography are representative of the struggle in all geography to become scientifically more accurate and complete; this is difficult when utilizing words employed loosely both in former days of very general geographic description and in present-day ordinary conversation or a word which has been translated into one English

term from several different foreign-language expressions. Next, geographers are often more concerned with care in analysis than in description. Further by overlooking the differences in the scales of source materials workers have used words interchangeably for different geographic considerations. And last, there is the methodological issue of whether or not to work from small-scale considerations to the larger-scale ones.

With these needs and weaknesses, some remedies will be realized from four immediate actions. 1) Recognition that only simple agreement on new terms is necessary. 2) Development of a descriptive technique which distinguishes objectively between the extent, the pattern of distribution, and the spacing of rural buildings. 3) Provision of terms which require the specific groups of scales of source materials. 4) Limitation of the use of certain words to specific groups of scales of source materials. A comment about each is needed.

Definition of many of the terms does not or can not depend upon etymology or past usage. Derivations of some of the words needed are insufficient for the professional connotations now required. Several terms presently current have been used so differently during the past century that it would be wiser to discard them than to recast their meanings. But international comparability depends on employment of the same words the same ways. Without basic origins and repetitive similar use we are now dependent upon simple agreement as to which words come closest to conveying descriptive ideas. This could be initiated most efficiently at an international meeting.

To date there has been little uniformity in geographic description of the form of rural settlement. The subjects have varied greatly as well as the scales of description. Also, words like open, loose, close, and disconnected have been favored. So a descriptive technique is needed for use with the usual office-type source materials available, namely, topographic maps

and air photos.³ One profitable guide is to describe the rural settlement form of an area according to its appearance on small-scale source materials first and then give further descriptions at larger and larger scales. Usually this proceeding from a general description towards the specific is productive since distributional designs which appear or disappear with change in scales of maps and air photos may be noted, because the procedure is likely to lead directly to international comparisons, and because a researcher is less likely to become entrapped by detail in the first steps.

A second guide is to delineate subtopical differences. In rural settlement geography this means that descriptions need to be separate for at least two different elements. The first is the extent of the area in which rural buildings are present or how much they are spread out. Generally this is not interpretable from source materials with scales smaller than 1/500,000 but especially prepared maps of some regions with scales to 1/1,000,000 may be suitable to determine this scattering. Secondly, the technique ought to disclose the geographic pattern of distribution of buildings. This is a description of the shapes or outlines of the various sub-area arrangements of symbols for buildings. It is not the extent of the inhabited area noted first.

A third guide is to designate measures of the spacing of buildings as well as of individual structures' characteristics. This is possible by descriptions which include the average maximal and minimal distances between buildings, just as in climatic descriptions average daily or monthly maxima and minima of elements are employed. These distances may be at least two kinds: the straight-line separations and the space between them along an existing circulation route. Then detailed measures of construction may be

added to complete the describing of form.

Classes of Description of Form

These general characteristics or needs are covered in a suggested classification of descriptions of rural settlement form. It is composed of four types, each of which should be included in an account of the morphology of any area. The four might be called the regional, sectional, local, and individual descriptions. Each is based upon the usual cartographic and photographic source materials available for an area and grouped by empirically estimated scales. And each involves terminology which is usually limited to just that category (Fig. 2-1).

Regional Description

The regional description is the most general one. Smaller scale consideration than this is beyond settlement geography and in population geography because symbolization is by numbers of people, rather than buildings, and because the inhabitants are shown in units of large numbers, rather than individually. Regional here entails description based upon source materials with scales of about 1/500,000 to 1/200,000; these usually show all or most of the smaller groups of buildings in an area. Although the smallest groups and the single widely-separated buildings are often omitted from the maps or are not seen on air photos (by cartographic design or because of the purpose for which a map or photo is executed), the general areal extent of rural settlement usually is interpretable; this is especially so for scales larger than 1/400,000 in a region of discontinuous settlement or 1/300,000 in a continuous settlement region.

To describe extent of settlement the terms scattered and limited are

Descriptive Class Scale of Source	R E G I O N A L		S E C T I O N A L		L O C A L		I N D I V I D U A L	
	1/500,000 - 1/200,000	1/200,000 - 1/75,000	1/75,000 - 1/15,000	1/15,000 and Larger	Number of buildings in each type of unit	Characteristics of individual buildings		
Greatest Detail Shown on Source	Usually all or most groups of 15 or more buildings	Usually all or most single buildings						
Descriptive Terms	1. Extent of Rural Settlement	2. Distributional Design	4. External Shape of Multiple Settlerent Units	7. Horizontal Plan				
	a. Scattered (all over)	a. Spots (random, regular)	a. Form of Outside Outline (oval, irregular, etc.)	a. Shape				
or	b. Limited (e.g., to SE-1/4)	b. Lines (orientation, length)	5. Internal Pattern of Multiple Settlement Units	b. Size				
		c. Areas (shape)	a. Shape of central place (after Martiny)	c. Use of space				
Headings		3. Settlement Unit Type & Spacing	b. Distributional pattern of buildings in relation to central place or point	8. Vertical Plan				
		a. Singles	6. Spacing of Buildings	a. Shape				
		b. Multiples:	a. Adjoining walls (location and number of buildings)	b. Size				
		Clusters	b. Separate walls (location, number and distance apart of buildings)	c. Type of roof				
		Hamlets		9. Construction Materials				
		Villages		a. Type				
				10. Other				

* Topographic maps and air photos are considered to be the usual non-field work sources available; those with scales smaller than 1/500,000 are of little value for rural settlement description unless prepared especially for it.

Figure 2-1

recommended. In fact, the former might be called scattered all over to emphasize that buildings are throughout an area. By contrast, limited extent denotes that only part of an area has buildings in it, such as, the southeastern quarter or the central and eastern sections of a study area. This description is dichotomous and there is no intent to describe differences in density. However, minima of spacing may have to be sought.

During the past century the terms dispersed and concentrated have been used sometimes to indicate this extent of settlement in a small-scale context. Other times they have been used to mean spacing in a large-scale sense. These are, of course, two quite different things. But dispersed is the one that has been used in the most confusing ways. Ordinarily it means scattered throughout or spread widely in an area.⁴ But technical applications were so numerous by 1926 that Marguerite Lefèvre tried to coordinate them. To Miss Lefèvre dispersed meant a scattering of houses all over an area, although she also added the phrase "in closed association" to describe spacing.⁵ She repeated her efforts in 1930 and in 1932 Dantin Cereceda called for the definition of dispersion.⁶ But these expressions were not heeded and other meanings have been mixed in, such as "...not more than 2 or 3 families living close together"⁷ and "A pattern of rural settlement, with isolated farms or cottages not grouped in villages or hamlets...."⁸ These were countered by Jones' helpful synonymous use of dispersed and scattered⁹ and occasional uses, as in the Spanish census, of the word disseminated. Even now we still find mixed and unclear meanings remain in elementary and advanced works alike.

The term concentrated is almost equally confusing. Some usage clearly refers to how closely buildings are spaced, as in a village. Other refer-

ences clearly mean limitation geographically. Thus, for both dispersed and concentrated it appears wise to discard them and to substitute scattered all over and limited in the regional descriptions.

Sectional Description

Sectional descriptions are the next more detailed ones. They are made from source materials with scales of about 1/200,000 to 1/75,000. These usually show most or all of the single buildings or single-family groups so sectional descriptions need to be of two types, those on distributional design and those covering the type of settlement unit and spacing.

Distributional design usually is more easily described with source materials in the smaller-scale part of this class. There the patterns are often clearer and are divisible into spots, and/or lines, and/or areas. Modifiers may be added to note whether a pattern is random or regular in appearance, what its dimensions are, and what geometric design, if any, is apparent. Of course, a study area may include all three types and it is expected that each would be described locationally (e.g., northwestern corner).

With source materials having scales of 1/100,000 to 1/75,000 the settlement unit types and their spacing can be delineated. It is recommended that the focus of description here be the residence and that there are two types: those occurring singly and those in multiples; the latter are subdivided into clusters, hamlets, and villages. For each the first computation needs to be the percentage of houses in each category to determine the degree of grouping. The term single refers to those residences, and any associated outbuildings, which occur alone. Inasmuch as alone is not yet defined, international comparison, and perhaps definition, will be possible if all researchers adopt

the principle of giving the average minimal and maximal spacings of singles as a part of their description. Thus, an account might read "In this section of Spain 18 per cent of the dwellings are singles which are 7-16 miles (11-26 km.) from the nearest neighbor of any type".

Next is the cluster. This is the real unknown of rural settlement geography. It is a small number of rural buildings, defined here as only dwellings, forming a loose group. The category has hardly been recognized by geographers or other social scientists.¹⁰ Yet, the study of clusters and the clustering tendency undoubtedly will disclose sociologic or psychologic elements significant to spacing and should lead to better understanding of the origin of central places.

The third unit is the hamlet. Diversity of definition of it by social scientists is easily demonstrable. Monkhouse calls it a small group of houses that is too small to be a village and usually has no church,¹¹ Trewartha suggested a minimum of five buildings with certain maximum spacing and other characteristics for an unincorporated U.S. hamlet,¹² Schwarz recommends a hamlet as 2 to 20 buildings,¹³ while Wolfe notes that in Latin America a hamlet (caserio) has approximately 20 to 200 people, a large hamlet (villorio) 200 to 1000 persons, and that each has other distinguishing characteristics.¹⁴ Many European uses or legends on maps infer hamlets to be small groups of laborers' or farmers' dwellings. How it is to be defined now depends on worldwide comparative studies of clusters, hamlets, and the next type of settlement unit.

This is the village, as inadequately defined as the hamlet. Many writers distinguish the village largely by population, others by population and function, and still others by organizational or areal status. For

clusters, hamlets, and villages a hypothesis recommended here is that the measures be in numbers of buildings, that the clusters have only residences, that hamlets have a small proportion (perhaps 10-15 per cent) of their buildings in non-residential use, and that villages have both more buildings and more non-residential buildings than hamlets up to a possible total of 200 structures.

It is important to recognize that the spacing between buildings in a category generally decreases as one goes from the single buildings to a village. Also, spacings need to be described in two ways, that between the representatives within each type and that between nearest neighbors of whatever type. Thus, a sectional description might begin with the percentage of the total number of buildings in each type, the spacing of each of the four considered separately, and then the spacing with all four considered together.

It will be noted that the word isolated has been omitted. This is on purpose. Isolation is too weak a word and has been used in too many different ways to be of value in an objective scheme. Of Latin origin, rather than geography's many Greek "iso-" terms, it is defined partially as "....to keep apart or away from others so as to minimize or wholly reduce any effect on others".¹⁵ Geographers agree that the word refers to spacing, yet it is not included in geographic dictionaries. The questions are: how far apart, how much minimizing, and which effect (e.g., geographic, psychologic, economic)? Further, the present means of communication and circulation make isolated as defined not applicable in much of the world and certainly not for many areas where geographers have used it.

Anyway, isolation is not a single thing. Rather, there are degrees of it. But each grade of separation needs specifications. An example of such

is the measures of isolation used herein (Chapter 4) where the word isolation is employed in a broad sense and then defined specifically in other words. The measures used disclose at least four degrees of isolation, each of which includes a gauge of the location of a dwelling with respect to its distances from varying numbers of different kinds of transport routes. It is hoped that further work on the degrees of isolation will lead to more specific sectional descriptions so that something like the earlier Spanish example (p. 43) might have added to it "... and each home is within 1-2 miles (1 1/2-3 km.) of a local road, within 17 miles (27 km.) of two inter-regional roads, within 11 miles (18 km.) of a local railroad, and more than 20 miles (32 km.) from any other established route for transport".¹⁶

Local Description

Local description of the form of rural settlement discloses more detail than the sectional account. By definition here the local class is based on source materials with scales of 1/75,000 to 1/15,000. At these the number of specific buildings in each type of settlement unit usually is observable and, therefore, it is possible to distinguish the external shapes as well as the internal patterns and spacings of buildings within units.

Description of external shape and internal pattern applies primarily to clusters, hamlets, and villages. For the former the useful terms might be those denoting a geometric form or similarity thereto. For the internal patterns Martiny provides a guide by describing the shape of the central place or point; to this might be added as modification of his remaining description

which delineates the building distributional patterns in relation to the center of the settlement unit.¹⁷

The third kind of local description concerns the spacing of buildings in all four units. It is recommended that structures with adjoining or common walls be designated as to location and, if possible, the number of family units connected. In addition, the buildings with separate walls need to be described as to location, number, and distance apart within the unit.

Individual Description

The fourth class of accounting of rural settlement form is the individual description. This is based on source materials with scales larger than 1/15,000 from which the characteristics of a particular building may be determined. These include three things commonly associated with the term house type. They are the horizontal plan of a building to show the shape, size, and use of the overall space and of its parts; the vertical plan to disclose the other dimension of shape and size as well as the architectural type of roof; and the kind of constructional techniques and materials used internally and externally. Then may come additional details, such as, the placement and style of chimneys, windows, and porches.

Other Measures of Form

Other measures of the form of rural settlement have been mostly numerical indices. They have been largely the work of geographers and primarily referred to the average spacing of

individual dwellings. All of these exponents have been limited to single-scale consideration and, of great interest to geographers, not one is known to have been either applied outside the country of origin or inside it more than just once.

Twenty-two indices were collated, by date of publication, in order to consider their possible utility to this study. None appeared suitable for the objectives herein but each was useful in the development of the measures employed; all 23 are summarized in figure 2-2. It is clear that the period of greatest development was in the early 1930s, probably due to Demangeon's driving force in the organization of the Commission on L'Habitat Rural at the International Geographical Congress in Cairo, Egypt in 1925. But since the 30s new measures have been modest in number. This is probably a result of the eclipsing interest of the urban part of settlement geography, the stifling of thought by the unconscious assumption that there is only one index of distribution, and the confused situation regarding the objectives and terminology of rural settlement geography.

Most single indices of so complex a pattern as distribution of rural buildings have weaknesses. One number could hardly be expected to delineate a "coefficient of concentrated or dispersed settlement," as it was called. Further, most of the formulae included one or more elements which were undefined, for which data could be obtained only locally by field work or in unique censal enumerations, or which appeared to be arbitrary

Figure 2-2

MEASURES OF RURAL SETTLEMENT FORM

AUTHOR	DATE	FORMULA	ELEMENTS OF FORMULA
Woeikof ¹⁸	1909	$K = \frac{P}{H}$	K is index, P is number of inhabs., H is no. of inhabited places.
LeFevre ¹⁹	1926	No. Houses per sq. KM.	1-10, 11-25, 26-50, 51-100, 101-250, 251-500, 501-1000, 1000+.
Bernard ²⁰	1931	$C = \frac{HA}{S^2}$	C is index of concentration, H is no. of houses, A is area, S is no. of settlements.
Biermann ²¹	1931	60-Meter Spacing	More than 60 M. between houses is dispersed.
Clozier ²²	1931	$I = \frac{n}{m}$	I is index, n is no. places isolated, m is total no. inhabited places
Kielczewska ²³	1931	150-Meter Spacing	More than 150 M. between houses is dispersed.
Meynier ²⁴	1931	$G = \frac{I}{P}$	G is index of grouping, I is total no. of inhabitants, P is total no. of inhabited places
Millet ²⁵	1931	300-meter Spacing	More than 300 M. between houses is dispersed.
Demangeon ²⁶	1933	$C = \frac{E \times N}{T}$	C is index of dispersion, E is pop. of commune minus its chief place, N is no. of isolated settlements, T is total pop.
Zierhoffer ²⁷	1934	$R = \frac{p \times s}{d} \times K$	R is degree of dispersion, p is average area per dwelling, s is no. house groups in commune, d is total no. inhabitants, K is 0.005.

Figure 2-2, p. 2 (continued)

Pawloski ²⁸	1938	$C = \frac{A}{A_s}$ and $MC = \frac{As}{S}$	C is index of concentration, A is 25 km. ² , A _s is area occupied by settlements; MC is mean index of concentration, S is no. of settlements.
Robinson-Barnes ²⁹	1940	$D = 1.11 \sqrt{\frac{A}{n}}$	D is average distance of a farmhouse to nearest six others, A is total area, n is no. of farmhouses.
Debouverie ³⁰	1943	$K = \frac{X \times L}{H}$	K is index of concentration, X is minimum no. of dwellings per settlement, L is no. settlement units, H is total no. of dwellings in commune.
Mather ³¹	1944	$D = 1.07 \sqrt{\frac{A}{n}}$	D is average distance of a farmhouse to nearest six others, A is total area, n is no. of farmhouses.
Kant ³²	1950	$X = \frac{1}{M} \sqrt{\frac{A}{D}}$	X is index of concentration, $\frac{1}{M}$ is map scale, A is area, D is density of habitations.
Enequist ³³	1951	70-Meter Spacing	Less than 70 meters between houses is a non-rural settlement.
Monkhouse ³⁴	1952	$I = \frac{S}{H}$ also $C = \frac{I}{S}$	I is index of dispersion, S is no. of settlements, H is no. of isolated houses. C is index of grouping, I is no. of inhabs., S is no. of settlements.
Houston ³⁵	1953	$C = \frac{S \times N}{T - E}$ (Amended Demangeon)	C is index of dispersion, S is area of commune, N is no. of isolated settlements, T is total pop., E is pop. of commune minus its chief place.

Figure 2-2, p. 3 (continued)

Clarke-Evans ³⁶	1954	$I = \frac{\sum r}{N} \div \frac{1}{2} \sqrt{p}$	I is index of departure from randomness of distribution of dwellings, $\sum r$ is sum of distances to nearest neighbor, N is no. of measurements made, p is density of observed distribution (no. of individuals/unit area).
Tanioka ³⁷	1957	$M = \frac{S \times T}{S \times N}$	M is index of dispersion, S is area of map sheet (1/50,000 scale), T is per cent of land cultivated, S is average agricultural area worked per family, N is average no. of rural houses per village.
Stone ³⁸	1962	R or FZ=Rh+Nr	R is region of continuous or discontinuous settlement or, FZ is fringe zone in discontinuous settlement region, Rh is no. of permanent residences within 3 miles along 1-6 major directions from any one permanent residence Nr is no. (1-4) of interregional and local routes of access (RR., Rd., Water, Air) within 10-20 miles of each permanent residence.
Inouye ³⁹	1964	50-meter Spacing	Isolated means less than 3 houses within 50 m. of each other, scattered means 3 or more houses less than 50 m. from each other, concentrated means more than half of the houses in a village distributed into one group within 50 m. range, condensed means more than half of the houses in a village centralized into one core.

decisions about spacing. Too, so many of these efforts were centered on regions called herein Continuous Settlement whereas the primary concern of this study is the Discontinuous Settlement Region in which there are clearly three or more degrees of isolation and, therefore, groupings of dwellings. A complete analysis of these calls for multi-scale considerations as well as new terminology.

Description of Process

The need for descriptive techniques for the processes of settling and abandoning is even greater than for form. Usually an account of process is in chronological terms rather than areal. When the latter it is most often a small-scale consideration and subjective. Most common is a lack of distinction between settlement form and the processes of settling and abandoning.

In general, these weaknesses reflect poor definition of the object of study or lack of interest in describing change. It seems that process has been treated by many social scientists as a topic of purely historical interest but impractical for extrapolation into the future for planning. Also, the criticism has been made that people are too complex as individuals and that cultures are too different for transfers of process experiences either areally or temporally. This study is predicated on a challenge of these beliefs. It is, in fact, noted here that there is insufficient evidence to support generalizations about the processes of settling and abandoning at this time; too little is known about them.

A lack of measures of process parallels the lack of careful and prolonged study of the actions themselves. Unlike the more sophisticated measures of form, settling and abandoning have usually been gauged in the very simplest ways. Either buildings are present or absent or they are used or unused, land is either cleared or not, and roads are either present or absent. Everything is dichotomous -- unlike the elements being studied.

Considerable additional study is needed to determine direct and indirect indicators of rural settling and abandoning. Distinction is required between seasonal and year-round occupancy as well as between seasonal disuse, unoccupied, and abandoned. The normal life and death on a landscape needs definition.⁴⁰ Decision making by settlers ought to be analyzed. The psychological and sociological characteristics of individual versus group action needs research. And a host of other cultural, as well as physical, elements of the landscape demand equal study. Each requires first the delineation of measures and until this is done the real processes of settling and abandoning will remain largely unknown.

Suggested Basic Terminology

It is recognized that many sets of terms have all ready been used to describe form and process in the geography of rural settlement. Most often categorization is by nomenclature which appears to be standardized (e.g., dispersed, isolated) but which in detail is not. Therefore, to provide bases for

comparable thinking a short glossary of suggested basic terms follows with synonymous, or nearly so, uses by other authors and the definitions as used in this writing.

Rural settlement pattern. The spatial arrangement of residences and features directly related to residence in areas where inhabitants are primary producers dependent upon one or more local natural resources.

Populated area: ecumene (or other spellings) (many authors), vollokuemene (Fochler-Hauke). That part of the earth in which there is permanent settlement of people mapped by the distribution of permanent residences at scales smaller than 1/200,000; the space associated with each dwelling is not defined yet.

Semi-populated area: semi-ecumene and peri-ecumene (Czajka), kampfsraum (Hatzel), sub-ecumene (Fochler-Hauke). uninhabited (some authors). That part of the earth in which there is temporary settlement of people, mapped by the distribution of temporary residences at scales smaller than 1/200,000; the space associated with each dwelling is not defined yet.

Unpopulated area: uninhabited (many authors), anecumene (or other spellings) (many authors). That part of the earth in which there are no residences of any type, mapped at scales smaller than 1/200,000 in minimum mapping units of about 100 square miles.

Permanent settlement. One or more dwellings and directly related structures occupied for a decade or more and presently occupied with intent of continual use, or dwellings erected and occupied with intent of long-time use (at least more than a decade). Degrees of permanence are recognized with respect to amount of attachment (e.g., number and size of buildings, utilities installed) and the temporal nature of use (e.g., year-round or seasonal inhabitance).

Temporary settlement. One or more dwellings and directly related structures which are easily moved or are erected or occupied with intent of moving or abandoning them seasonally or entirely in a few years. Included are natural shelters used irregularly by nomadic people.

Continuous Settlement Region: continuous settlement (Semple), developed area (many authors). A succession of permanently occupied residences less than three miles apart in all major directions from nearer neighbors so as to create a completely occupied area of at least a few hundred square miles (see Chapter 3). Is part of the populated area.

Discontinuous Settlement Region: pioneer fringe (Bowman and others), pioneer settlement area (many authors). An irregular distribution of permanently occupied residences some of which are less than three miles from nearer neighbors while others are farther and all of which cover an area of at least a few hundred square miles. Is part of the populated area, may include some unpopulated area, and is at an edge (longitudinal, latitudinal, outer, or inner) of a region of Continuous Settlement. A Discontinuous Settlement Region may be divided into one to four fringe zones and it is part of the populated area.

Fringe Zones of Settlement. Subdivisions of the Discontinuous Settlement Region (see Chapter 3).

Scattered settlement: isolated (many authors), dispersed settlement (many authors at various scale considerations), intercalated (Demangeon), agglomérée (many French authors), dissemination (Aurosseau), emphasis on dispersion (Thorpe), association of farms not forming village (Biasutti). A pattern of residences and associated buildings found throughout an area of study when mapped at scales of 1/500,000-1/200,000; the space associated with each building is not defined yet.

Limited settlement: concentration (Lefèvre and others), compact (Trewartha), clustered (many authors), agglomerated and partial agglomeration (Aurosseau and others), dispersed (some authors at large-scale considerations), emphasis on nucleation (Thorpe). A pattern of residences and associated buildings found in only a part of an area of study when mapped at scales of 1/500,000-1/200,000: the space associated with each building is not defined yet.

Settling. The process of construction of residences and associated buildings in an unpopulated area or in an uninhabited part of a semi-populated area. (Within a populated area this action is described as increased density by the construction of new homes).

Abandoning. The process of desertion, intended as complete, or removal of a residence in a populated area. To be distinguished from unoccupied but habitable.

Advancing fringe of settlement. The process of the areal expansion of the populated or semi-populated area of the world by the construction of new permanent residences on previously unoccupied land during a given period of time. Usually regional in scale but possibly sectional or local (Fig. 2-2).

Stable fringe of settlement. A motionless edge of a populated or semi-populated area during a given period of time. Usually regional in scale but possibly sectional or local (Fig. 2-2).

Retreating fringe of settlement. The process of the areal shrinkage of a populated or semi-populated area by the abandonment or removal of residences during a given period of time.

Usually regional in scale but possibly sectional or local (Fig. 2-2).

Planned settling. The process of inhabiting land according to a preconceived order in space and/or time. May be intentionally permanent or temporary (Parker⁴¹) and in varying degrees of completeness.

Unplanned settling. The process of inhabiting land by individual initiative and without overall direction in space or in time.

Individual settling. The process of inhabiting land by single settlers or single families usually moving in without reference to an overall plan.

Group settling. The process of inhabiting land by a number of settlers (unrelated or related in various ways) in a given area, during a given period of time, and often according to at least a general plan.

Pioneer settling. The initial stage in the process of land being inhabited, permanently or temporarily, for any function. The end of the stage is not defined because it is often directly related to the state of mind of the settlers involved.

Pioneer settlement. The form of rural settlement in the stage of initial settling.

First-order isolation. The degree of physical separation of residences, usually expressed in straight-line distances and directions between nearer neighbors and usually refers to travel on foot.

Second-order isolation. The degree of separation of residences by distances and directions between nearer neighbors on existing vehicular transport routes.

Third-order isolation. The degree of separation of residences by means of communication (e.g., telephone, radio; stated in terms of presence or absence of facilities and in time required to establish contact).

Complete Scale Consideration

When the existing literature on rural settlement morphology is reviewed it is clear that descriptions and analyses usually are at only one scale in any one reference.⁴² Further, the scale is mostly a large one, often the type designated here as individual, and usually leads to more detail rather than to generalizations. One testimony of this is the absence of any map of the rural settlement form of a major sub-continent-

al area prepared by one author and only two (of Europe) compiled by one person from the works of many.⁴³ Perhaps this lack reflects a limitation in source materials but, that seems doubtful for many areas.

The multiple-scale consideration has been recognized as very significant to geographic research for many years. Yet, most recognition has been indirect. James showed it by noting that different objectives are served by studies at small, intermediate, and large scales.⁴⁴ In 1954 a group of geographers wrote "The general neglect of the meaning of differences of scale or degree of generalization in studies of areal differentiation is a lacuna in geographic thinking. . . .Every kind of region,. . .can be organized in a hierarchy of ranks ranging from those with the least degree of generalization to those with the greatest degree of generalization."⁴⁵ This was another inferential way of calling for differently scaled work in the same area. The four-class division suggested by the committee was based on mapping scales of larger than 1/50,000, 1/50,000-1/250,000, 1/250,000 -1/5,000,000, and smaller than 1/5,000,000.⁴⁶ Three authors wrote later "Every change in scale will bring about the statement of a new problem, and there is no basis for assuming that associations existing at one scale will also exist at another."⁴⁷ Another individual observed "....the scale of an investigation affects both its subject and its conclusions."⁴⁸ And quite recently attention was directed to several multi-scale

approaches drawn up since 1916 with the concluding thought being

"It is clear that open recognition of the problem of working within a scale continuum clarifies some problems and raises others."⁴⁹

This study's central theme is the analysis of new rural settling experiences in Norden on the hypothetical basis that planning for similar activity in Nornan may profit from it. During preparations for this research some rural settlement morphological study seemed essential; it was then that this geographical la cuna, as the committee called it, became clear again. To fill the gap the suggestion is made here that a description of rural settlement form should include at least nine parts to be complete and internationally comparable. These are consecutively arranged from general portrayal to more and more specific accounts through four scale classes of regional, sectional, local, and individual. This requires the use of at least four differently scaled/source materials; but seven or eight differently scaled maps and air photos may actually be necessary. In addition, the procedure calls for agreement on the use of certain terms, and the abandonment of others, as well as the limitation of these words to specific scale classes.⁵⁰ However, the real recognition of the need for and the development of the scale classes did not come until the last half of this study so there is occasional disparity between recommendation and use of terms herein.

Footnotes

1. A major part of this chapter was presented in a shorter form as K. H. Stone, Four Classes of Geographic Description of the Form of Rural Settlement, paper read at the St. Louis meetings of the Association of American Geographers, April 1967.

2. An excellent example is the term settlement itself, a part of whose definition is "Any form of human habitation, usually implying more than one house, though some would include a single isolated building...." from F. J. Monkhouse, A Dictionary of Geography, Chicago, 1965, p.278. This is one of a vast number of examples which could be cited to support what James has described so concisely with "But more often the misuse of words results for lack of attention", in P. E. James, On the Origin and Persistence of Error in Geography, Annals, Association of American Geographers, V. 57, 1967, pp. 1-2^b, quotation from p. 6.

3. Observation in the field is essential, of course. We assume that most study of rural settlement form will begin with maps and air photos and will be augmented by ground photos, statistics, and documentary data at all stages of the research.

4. P. B. Gove (ed.), Webster's Third New International Dictionary, Springfield, Mass., p. 653.

5. M. A. Lefèvre, L'Habitat Rural en Belgique, Liège, 1926, especially pp. 9-14; M. A. Lefèvre, Classification generale des types d'habitat, Second Report of the Commission on Types of Rural Habitat, Florence, Italy, 1930, pp. 70-75.

6. J. Dantin Cereceda, Estado Presente de la Cuestion del "Habitat Rural", Boletín de la Sociedad Geografica Nacional, 1932, pp. 25-34.

7. M. Wolfe, Rural Settlement Patterns and Social Change in Latin America, Latin American Research Review, V. 1, No. 2, 1966, pp. 5-50, ref. on p. 13.

8. Monkhouse, op.cit., p. 98.

9. E. Jones, Human Geography, London, 1965, especially pp. 114-140.

10. One study which discloses the initial value of research on clusters is F. J. McCutchen, Towards a Geographic Definition of Dispersed Rural Settlement: A Comparison of the Lugo-Leon Provinces of Northwest Spain, 1965, 8 pp., unpublished manuscript, University of Georgia, 1966.

11. Monkhouse, op.cit., p. 152.

12. G. T. Trewartha, The Unincorporated Hamlet: One Element of the American Settlement Fabric, Annals, Association of American Geographers, V. 33, 1943, pp. 32-81.
13. G. Schwarz, Allgemeine Siedlungsgeographie, Berlin, 2nd edition, 1961, pp. 78-83.
14. Wolfe, op. cit., p. 13.
15. Gove, op. cit., p. 1199.
16. A sociologist made a start with a 16-element system of measuring isolation in H. A. Aurbach, A Guttman Scale for Measuring Isolation, Rural Sociology, V. 20, 1955, pp. 142-145. Unfortunately there is no record of the study having been revised and reapplied to the original study area of Kentucky or anywhere else.
17. R. Martiny, Lie Grundrissgestaltung der deutschen Siedlungen, Petermann's Mitteilungen Ergänzungsheft, Nr. 197, Ergänzungsband Nr. 43, Gotha, 1928.
18. A Woeikof, Le groupement de la population rurale en Russie, Annales de Géographie, V. 18, 1909, pp. 13-23.
19. M. A. LeFèvre, L'Habitat Rural..., op. cit., p. 114.
20. J. Bernard, Une formule pour la cartographie de l'habitat rural avec application au département de l'Yonne, Comptes Rendu C.I.G., Paris, 1931, V. III, pp. 108-117, (1934).
21. C. Biermann, L'Habitat rural en suisse, Comptes Rendu C.I.G., Paris, 1931, V. III, pp. 17-32 (1934).
22. R. Clozier, L'Habitat rural dans le département du Lot, Comptes Rendu C.I.G., Paris, 1931, V. III, pp. 134-149, (1934).
23. M. Kielczewska, L'Habitat rural de la posnanie, Comptes Rendu C.I.G., Paris, 1931, V. III, pp. 250-256, (1934).
24. A. Meynier, L'Habitat rural dans le Ségalas, Comptes Rendu C.I.G., Paris, 1931, V. III, pp. 99-102.
25. G. Millet, L'Habitat rural dans la région meusienne, Comptes Rendu C.I.G., Paris, 1931, V. III, pp. 47-60.
26. A Demangeon, Une carte de l'habitat, Annales de Géographie, V. 42, 1933, pp. 225-232. The system was applied to the whole country in the Comité National de Géographie, Atlas de France, Paris, 1938. Plate 80. See also A. Allix, Examen critique de la méthode de représentation de l'habitat rural par A. Demangeon, Comptes Rendu C.I.G., Varsovie, 1934, V. III, pp. 425-428.

27. A. Zierhoffer, Sur une formule servant à exprimer la dispersion et la concentration absolue de l'habitat rural, Comptes Rendu C.I.G., Varsovie, 1934, V. III, pp. 410-415.
28. S. Pawloski, Encore une méthode de représentation cartographique général de l'habitat rural, Comptes Rendu C.I.G., Amsterdam, 1938, V. II, pp. 129-130.
29. A. H. Robinson, and J. A. Barnes, A New Method for the Representation of Dispersed Rural Population, Geographical Review, V. 30, 1940, pp. 134-137.
30. A. H. Debouverie, Une Méthode à base numérique pour la cartographie de l'habitat...Belgique, Bull. Soc. Belg. d'Etud. Geog., V. 13, 1943, pp. 146-196.
31. E. C. Mather, A Linear-Distance Map of Farm Population in the U.S., Annals, Assoc. of Amer. Geogrs., V. 34, 1944, pp. 173-180.
32. E. Kent, Quelques problèmes concernant la représentation de la densité des habitations rurales. Exemples pris en Estonie, Lund Studies in Geography, Series B: Human Geography, No. 2, Lund, 1950, pp. 1-9
33. G. Enequist, Vad är en Tätort? Tätorter och Umland, Lund, 1951, pp. 5-15.
34. Monkhouse, op. cit., pp. 362 and 364-365.
35. J. M. Houston, A Social Geography of Europe, 1961, p. 83.
36. P. J. Clark and F. C. Evans, Distance to Nearest Neighbor as a Measure of Spatial Relationships in Population, Ecology, V. 35, 1954, pp. 445-453.
37. T. Tanioka, Différenciation régionale des types de l'habitat rural au Japon, Proceedings of Intern. Geogr. Union Conference in Japan, 1957, Tokyo, pp. 503-512, (1959).
38. K. H. Stone, Swedish Fringes of Settlement, Annals, Assoc. of Amer. Geogrs., V. 52, 1962, p. 374.
39. S. Inouye, Settlement Measurement in Japan, Abstracts of Papers, 20th Intern. Geogr. Congress, London, 1964, p. 308.
40. A settled landscape is like a group of people: A home is vacant (a person dies) and another home is built (a person is born). Each is a normal increase/decrease relationship rather than a signal of significant settling or population change.

41. V. J. Parker, The Planned Non-Permanent Community, Ottawa, 1963.
42. An interesting comment related to geographical research in general is "...most geographic studies in which area differences are identified and plotted on maps fall into two widely separated scale ranges. First, ... between 1/10,000 and 1/62,500... In contrast, 1/3,000,000 or smaller." P.E. James, Toward Further Understanding of the Regional Concept, Annals, Association of American Geographers, V. 42, 1952, pp. 195-222, quotation from p. 206.
43. Houston, op. cit., Fig. 16 (p. 103) and Fig. 20 (p. 127).
44. James, op. cit., pp. 208-211.
45. D. Whittlesey, The Regional Concept and the Regional Method in P. E. James and C. F. Jones (eds.), American Geography, Inventory and Prospect, Syracuse, N. Y., 1954, pp. 19-68, quotation from p. 47. Although I was a member of the committee which recorded this idea I do not recall any specification that the hierarchy was clearly recognizable by differently scaled studies of the same area; however, it is clear now that at least some of us recognized the point subconsciously.
46. ibid., pp. 48-51.
47. H. H. McCarty, J. C. Hock, and D. S. Knos, The Measurement of Association in Industrial Geography, University of Iowa, Department of Geography Report 1, Iowa City, 1956, p. 16.
48. J. L. M. Gulley, The Turnerian Frontier, Tijdschrift voor Economische en Sociale Geographie, V. 50, 1959, pp. 65-72 and 81-91, quotation from p. 89.
49. P. Haggett, Scale Components in Geographical Problems in R. J. Chorley and P. Haggett (eds.), Frontiers in Geographical Teaching, London, 1965, pp. 164-185, the approaches noted on pp. 171-172 and the quotation from p. 183.
50. As James has said, op. cit., On the Origin...., p. 6 "Clearly, the popular vocabulary changes through misuse, and language grows 'like a language should'. But in communication among scholars such errors would seem to be inexcusable." This statement and so many others in this perceptive article are so descriptive and analytical of the weaknesses of present-day rural settlement geography that the study of it is strongly recommended to all who aspire to do serious work in that part of the field.

Chapter 3

THE FRINGE OF SETTLEMENT IDEA

In general the fringe of settlement idea is a geographical concept. It focuses attention on the edges of the inhabited world. It implies that there are varying degrees of geographic isolation and that the analyses of these is in terms of dwellings' relative positions. No other element of the landscape is of primary significance at this point. Nor is the classification based upon a theory involving the apparent or intrinsic qualities of residences.

In this study the fringe of settlement is the Discontinuous Settlement Region. This is an area of irregularly distributed houses and allied buildings where some are only yards apart and others several miles. It is located by regional-scale mapping and usually is found in the higher latitudes at a poleward edge of the Continuous Settlement Region. However, there are variations in this general location, especially in other latitudes where a Discontinuous Settlement Region may be within one of Continuous Settlement.

Need of the Concept

One value of the fringe of settlement idea is its fostering objective study of what has become a complex area. Centuries ago the world was rather simply divided into the ecumene and the anecumene. A sharp line separated them and the uninhabited land was to the north and south of the inhabited;

the anecumene was thought to be so because it was too cold poleward and too hot equatorward.

However, the thoughts were incorrect. World population increased, technological improvements were made, and the populated area expanded into the anecumene. For centuries the edge of the inhabited world absorbed large numbers of the world's increasing inhabitants or offered such potentials for it that in some sections of the world people still consider vacant land as an absorber of the rapidly increasing numbers of people.

With qualifications the present-day fringes of settlement are potential areas of inhabitation. However, it has been known for at least a few decades that the best areas, in size and quality and location, are occupied all ready. Thus, the current fringe of settlement, especially in the northern high latitudes, is irregular in shape and a complex mixture of variously-sized pieces of land both suitable and unsuitable as to potential use or location. This means that the fringe itself must be subjected to much more careful scrutiny before settling now than in the past.

Furthermore, new settling is a more difficult process for present-day settlers than even a few decades ago. Certainly this is true in the free world's high latitude fringe of settlement. Though there are improved tools for work the expansion is harder because of several attitudes. One is that settlers used to conveniences, at least to seeing them if not

having them, are more uncomfortable without them than settlers in earlier times when the differences between the densely settled areas and the fringes were not so great as today. And it is not only conveniences that are missed but items now considered essential anywhere, such as, schools, hospitals, postal service, and fire protection. Further, a new settler now may be constantly reminded of what the family, especially the children, are missing with such things as the increasingly widespread distribution of transistor radios and telephone lines.

Definition

One might expect a definition of fringe of settlement to be readily available if the world has had it so long. Such is not the case. Though the world of recent times has experienced much expansion of the populated land the terminology is used in contradictory ways in different countries and is mostly non-geographic. "Frontier", for example, more commonly connotes an advancing agricultural border. "Pioneer" does also with the additional implications of either early stages of clearing or considerable hardships being endured. "Marginal" includes some of the meanings of both the others but so often refers directly to economic status. Though frontier and marginal do have locational values they have been used mostly for other meanings. Thus, these three possible terms are unsuitable for defining the Discontinuous Settlement Region here.

By employing the term fringe of settlement the geographic

aspect is stressed and it appears easier for interested persons to recognize that the region may be characterized by occupations in addition to or other than agriculture, that the area may be stable in position or retreating as well as advancing, and that it may include long-time settlers with many essentials, conveniences, or even luxuries.

Conversion of acceptable terminology into the delineation of the region is based upon the selection of a significant characteristic. This was determined in this research during field observation from Alaska eastward to Finland over a period of years; most important were the interviews disclosing what the settlers themselves considered of primary importance. Clearly it was the ability of settlers to help one another, a point related directly to the planning-for-future-settling objective of this study.

Throughout the Northern Lands (as well as in other regions with higher degrees of isolation) dependence upon other people is recognized openly and without affectation. It may be thought to be "just friendliness" but it has other values. Fewer and farther neighbors means potentially less aid at times of emergency or short-time need. And this dependence increases directly with increasing isolation. Thus, a primary definable quality of the Discontinuous Settlement Region is the distribution of population. This is mapped best by the location of permanently occupied houses. But the region is understood more readily by the description of the two between which it is transitional.

The Continuous Settlement (CS) Region

Continuous settlement is defined as an apparently endless succession of close, permanently occupied homes. People are within three miles of each other (a distance considered here to be traversable in an hour, the assumed maximum time that emergency or short-time aid can take to arrive) in at least six major directions from any dwelling. There are practically no interruptions in tracts of at least a few hundreds of square miles; in these most of the land is used agriculturally, either wholly or in combination with other occupations.

The CS Region is held together by a dense network of transportation routes. These are all types and are oriented in all directions. Telephone service is usually everywhere. Ownership of land is largely private in parcels adjoining each other so as to make large totals of acreage while company-owned land and that in public ownership is a distinct minority. All the units of settlement usually are represented, this being the one region including urban centers of all sizes.

Also, the CS Region's settlement is continuous in time as well as in space. Settlers have clearly "put their roots down" in many ways by, for example, the construction of underground utility lines, of substantial houses and associated buildings, and of artificial drainage courses. Probably the region all ready has been occupied for at least decades at the time of classification but, more important, the intent is clear-cut to maintain or improve it for at least a few generations but

most often longer. Of course, such an area is likely to include an occasional vacant or new dwelling but these are only signs of the normal life and death on a landscape when in a distinct minority and widespread.

In general, new rural settling here is the easiest of that in all three regions if the land is suitable physically. New settlers are able to get or give aid quickly and from or in any direction. Transportation is available for shipment of goods in and products out; probably specialized agencies exist to expedite these movements. Markets are usually close by. Essentials as well as conveniences for living are readily available. In short, this is the well-developed part of the world where one finds the lowest degrees of isolation, the highest grades of permanence, and the greatest densities of population.

The Unpopulated (UNP) Region

Unpopulated Region refers here to a tract of land at least a few hundreds of square miles large in which there are no permanently occupied residences. Nor are there temporary dwellings occupied for short times regularly each year. An occasional small scientific or military observation post may be included but in general this is a region of either no people or occasional transients.

Usually the UNP Region has few or no land-based transport facilities. Water may be used, often seasonally, by vessels or aircraft but only an occasional short trail is present on the ground. Where a road or railroad of more than purely local significance cuts across the UNP Region, as in northern Norden between Kiruna and Narvik, the classification usually is in the

Discontinuous Settlement Region rather than unpopulated.

In general new rural settling in the UNP Region should not be considered. There are no settlers to provide help or advice nor any of the necessities of living. Most of the presently uninhabited parts of the Northern Lands are so because of combinations of physical unsuitability for settling as well as great isolation. Study of them is useful but any effort felt advisable toward new settling should be limited primarily to two zones in the region between that of continuous settlement and none.

The Discontinuous Settlement (DS) Region

The DS Region is the fringe of settlement where permanently inhabited and uninhabited land are mixed in varying degrees. Residences may be less than three miles apart but not in six major directions from individual ones; usually near the CS border they may be so near in four or five directions but as the UNP boundary is approached the distances apart increase and the numbers of homes decrease.

There is similar variation in the other elements of the landscape. In some parts of the DS Region there are contiguous parcels of land used agriculturally but with increasing distance into the region one usually finds less agriculture and more of other occupations, like forestry, fishing, or mining. Densities and types of transportation routes contrast widely from a few small areas with closely spaced regional and local lines to large tracts of widely separated, low-use, seasonal ways. Telephone

service is usually available in villages but is often missing in smaller concentrations of homes in the more distant parts of the region; postal service is similar, changing from daily in villages to less regularly or spasmodic in more isolated sectors. Also, ownership of land reflects these differences with the private holdings predominant near the DS/CS border but changing to more company and governmental tracts and, finally, to mostly the latter at the DS/UNP boundary.

In age of settlement the DS Region may have widely differing parts. Some places have origins in terms of hundreds of years ago, others in a few generations, and some are new. Sections appear to be declining, while others seem to be unchanging or growing in numbers of houses and amount of cleared land. Intent to stay is often clearly stated by or easily seen in the settlers but the ability to do so may be judged to range greatly. To measure permanence of settlement here is a major project in itself and it is needed badly.

In short, the DS Region is an intricately woven association of greatly varying elements of the landscape. Predominant is difference in the spacing of dwellings and their accessibility so as to judge the new settling potential. These are usually observable when mapped at scales smaller than 1/200,000.

However, few lines on maps represent equally sharp lines on the ground. The DS limits are no exception. Rather they show the centers of realms, narrow or wide, where changes take place most rapidly along perpendicular traverses. Often the

DS/CS limit is readily observable from the air and just as often, or more so, the DS/UNP is not; either may be sharpened or dimmed by the introduction of rapid changes in physical or cultural elements of a landscape or by changes in the scale of mapping.

Chapter 4

MEASURES OF ISOLATION AND THE FRINGE ZONES

An axiom of the DS Region is that its settlers consider their ability to help one another as of primary significance. By simple logic this may be interpreted to mean that a basic concept of settling in the region is a determination of a settler's isolation. But this is not so readily done because the variety of dwellings' spacings and accessibilities quickly demonstrates that isolation is not a single thing, rather it is present in degrees. Settlers recognize this in general but often only subconsciously distinguish the various objective measures in any degree of completeness. To provide a basis for comparative geographic consideration here some specific measures of isolation have been drawn up by empirical means. These combine patterns of spacing of houses in number of major directions apart via straight-line and vehicular-route distances. They are grouped so as to generalize the variety within the DS Region into four fringe zones designated as (from the CS toward the UNP) Inner, Middle, Outer, and Outermost.

Population Distribution Pattern

The first measure of isolation determines the location of the DS Region and contributes to its subdivision. It is a gauge of direct people-to-people relationships and, though termed population distribution pattern (Fig. 4-1), is measured by the separation of permanently occupied houses. The assumptions are that the persons involved move between dwellings on foot over straight-line routes and that they can cover an average distance of three miles ($2\frac{1}{2}$ km.) in one hour, this

MEASURES OF ISOLATION											
REGION, ZONE, TYPE	POPULATION DISTRIBUTION PATTERN	NUMBER OF ROUTES PROVIDING ACCESS*								SYNTHESIS : RELATIVE DEGREE OF ISOLATION	
		RAILROAD		ROAD		WATER		AIR		REGIONAL	LOCAL
<div>POLEWARD</div> <div>↑</div> <div>UNPOPULATED</div>	None (No population)	INTER-REGIONAL	LOCAL	INTER-REGIONAL	LOCAL	INTER-REGIONAL	LOCAL	INTER-REGIONAL	LOCAL	Very High	Very High
DISCONTINUOUS SETTLEMENT										Very High	High
4. Outermost Fringe Zone	Spots	0	0	0	0	0	0-1s	0	0		
Inland Type											
3. Outer Fringe Zone	Clusters of Spots,	0	0	0	1-2	0	0-1s	0	0-1	High	Moderate
Inland Type	Occasional										
Coastal Type	Short Lines	0	0	0	1-2s	0-1	1-3	0	0-1s		
2. Middle Fringe Zone	Groups of Clusters,	0-1	1-2	0-1	2-3	0	0-1s	0-1	0-1	Moderate-Low	Low-Moderate
Inland Type	Short and										
Coastal Type	Long Lines	0-1	0-1	0-1	1-3	1-3	1-4	0-3	0		
1. Inner Fringe Zone	Interrupted Areas,	0-2	0-2	0-2	3-4	0	0-3s	0-1	0-1	Low	Low
Inland Type	Clusters of										
Coastal Type	Groups	0-2	0-3	0-2	3-4	1s	1-4s	0-3	0-1		
CONTINUOUS SETTLEMENT	Uninterrupted Areas	1-2	2-4	1-3	3-4	0-3	0-4	0-3	0-4	Very Low	None

*—Within approximately 10-20 English miles of each permanent resident.
S—Only summer access on some or all routes.

FIG. 1. Measures of isolation in a fringe-of-settlement region.

Fig. 4-1. Measures of Isolation

time limit is taken because it is felt that if the travel required longer an emergency would be over or a short-time need would not be worth it.

With this measure the average area of one-half hour's travel from a dwelling is taken to have a radius of one and one-half miles (so that it is three miles maximum between dwellings for one hour's travel).¹ If there were maximum separation and a minimum number of residences the buildings would be arranged in a hexagonal pattern; therefore, in a CS Region neighbors are within three miles in at least six major directions from each other but in a Discontinuous Settlement Region they are either closer in fewer than six directions or farther away in one or more directions. The simplest way to recognize these differences is to prepare a map on which $1\frac{1}{2}$ -mile-radii circles are centered at the dwellings and the circles filled in and the region which is not solidly filled in is that of discontinuous settlement and shows first-order isolation.

Such a map (e.g., Fig. 5-2) may disclose a maximum of seven different patterns as described herein. The terms are based on a division of distributional patterns into spots, lines, and areas. They designate an increasing area of neighbors within three miles by a progression from single spots, to clusters of spots or short lines, to groups of clusters (of spots or short lines) or long lines, to clusters of groups (of spots or lines), to interrupted areas, to uninterrupted areas (Fig. 4-1).² The last is found only in the CS Region. Associated with these is a decline in size, but usually an increase in numbers, of the cells of uninhabited land included.

Accessibility

The second measure of isolation further differentiates the parts of the DS Region. It gauges accessibility in terms of the numbers and kinds of vehicular routes within 10-20 miles of a home; this distance was observed to be an average for the location of CS dwellings from transport lines in Norden. Of particular importance is all-weather bulk transport lines by which equipment and supplies for new settling may be moved in to a point and settlers' products out.

The kinds of accessibility classified are railroad, road water, and air routes with emphasis on the first two. For each of the four an initial division is made between lines which are primarily inter-regional and those only local. An inter-regional line connects the DS and CS Regions, usually by crossing the boundary at right angles; within the DS Region it is usually oriented north-south, carries direct and rapid passenger and freight vehicles on regularly scheduled (often at least once daily) operations. Of course, to do this it is maintained well and the volume of traffic is great in comparison to that on the other type of route.

This is the local transport line. It is oriented in any direction, usually short, follows an indirect course, is narrow, is more poorly maintained and serviced, and may have utility only seasonally. In general it is designed for short-distance movement of people and goods within an area and is not expected to be available for bulk traffic at all seasons.

The actual measurement of accessibility is the numbers of directions that these kinds of transport routes provide within 10-20 miles of

permanent residences. For example, in a coastal part of the Nordenic DS Region which adjoins a region of continuous settlement one may expect to find that each dwelling has within 10-20 miles of it the following: as many as two inter-regional and three local railroads, as many as two inter-regional and three or four local roads, as many as one inter-regional and one to four local water routes (which may be open only seasonally), and as many as three inter-regional and one local air route (Fig. 4-1). By the comparison of such facilities with other parts of the DS Region the differences in degree of isolation may be recognized.

Though these measures of isolation have objective quality they also have easily recognizable weaknesses. Some of these are: distance from a railroad is usually less significant than distance from one of its stations, especially for inter-regional traffic; distance from settlers to the nearest city is omitted; we do not know what the effective economic distances are for kinds of routes and different kinds of products on them in Norden; it is difficult to make allowances for military aid overland or by air in emergencies; and the 10-20 mile distance has been transferred arbitrarily from another region as the base measure in the DS Region. The study of these and associated questions is needed.

Means of communication are included subjectively in the measures but not as definitively as residential and transport route distributions. In the first place there are numerous variables, such as, the average distribution of instruments, or a phone may be accessible but the line may be busy or the people being called away, or there may be a phone in a hamlet two homes from a family in need but no way to get in to the

instrument, or radio contact may be made only at certain times or on certain days, or poor weather may prevent the observation of visual signals. In addition, the acquisition of basic geographic data on telephonic equipment in Norden is very difficult because of military security restrictions.³

Still another major problem in measuring isolation requires recognition. It is the settlers' feelings of separation. These are in degrees of strength which often may not correlate directly with the differences in isolation previously noted. A systematic measure of these feelings is difficult to devise and apply because different people use particular bases for comparison. For example, a person who has fled from tyranny may feel quite accessible at the end of a road in a free country where a citizen of that nation might feel himself almost intolerably separated from the rest of the world. Or, a person raised in a rural home might consider herself much less isolated than one at the same place who was brought up in a city. Or, a couple with children might resent or feel isolation more than people without offspring. These examples point up a need for primary study of the sociological and psychological qualities of rural settling.

All the necessary research noted above indicates that the measures of isolation used here are quite elementary. Nevertheless, they do provide a preliminary means of recognizing degrees of isolation, of quantifying them, and of generalizing them into four zones of potential for rural settling.

The Inner Fringe Zone (IFZ)

The Inner Fringe Zone is so named because of its usual location

at the southern edge of the DS Region. However, it is not along the full length of the border but in both Norden and Normam is broken into three areas each.

Although the IFZ has low regional and low local isolation it clearly is not in the CS Region (Fig. 4-1). Many of its residences are so close in three to six directions from each other that they form large populated areas but these are interrupted by rather small uninhabited tracts scattered throughout the zone.

Most of the coastal and inland parts are accessible by a limited number of routes. Each major area of settlement has at least one kind of inter-regional line, many have two, and some even three. For local movement each home usually is on or near at least two kinds of routes running in two to four different directions. Thus, the presence or absence of vehicles for movement may be more critical to breaking isolation than the existence of routes.

In general, these conditions mean that new settling, by groups or individuals, might be introduced with possibilities for permanence. Advice, aid, supplies, and some transport facilities are available in most directions. However, there usually were good reasons why presently inhabited areas were passed by previously; investigation should precede any settling to determine whether or not the reasons are still sound for the occupations proposed.

The Middle Fringe Zone (MFZ)

The Middle Fringe Zone's common position is immediately north of the IFZ. Like the latter, though, it is not continuous longitudinally and it does not always adjoin the Inner Fringe. In fact, in Norden

and Normam it occurs in four and six separate areas, respectively, and in at least one locality each there is no transition between the MFZ and the CS Region.

Generally the Middle Fringe's isolation is low to moderate regionally and locally (Fig. 4-1). Permanent residences are fewer and farther apart than in the IFZ so that the inhabited parts are quite linear in shape with inclusions of groups of clusters. In other words, many residences have others within three miles of them in only two directions, a few in three or four. Thus, the uninhabited land includes an important part of the MFZ's area, being as much as one-third to two-thirds of the total; in shape these sections are commonly linear and though no more than 10 miles wide are often tens of miles long.

Accessibility is distinctly limited in the Middle Fringe. Dwellings commonly are near only one inter-regional railroad or road but in the coastal parts some are also accessible by a second such kind of route on water. However, many homes are farther than 10-20 miles from any inter-regional line. These are usually dependent upon two local routes, commonly railroad and road, supplemented by seasonal use of water for boats or flotation of timber. At a few places local accessibility is in only two different directions; there the absence of a motorcycle, car, or phone could cause considerable loss at a time of need.

This amount of isolation might be interpreted two ways with respect to new settling. The MFZ, with so much uninhabited area, might be thought to have a much greater potential than the Inner Fringe. Or, the greater degrees of isolation might mean less promise. The latter

is the more realistic if the presence of experienced settlers nearby is of primary importance to new ones. Thus, the Middle Fringe may be said to have a potential for new settling by groups moving to carefully selected unpopulated tracts. But individuals going to such are likely to find too high a degree of isolation to develop permanence.

The Outer Fringe Zone (OFZ)

The name Outer Fringe Zone distinctly suggests great distance into the DS Region. It may be either in an inward direction or in increased latitude, as in both Norden and Normam. Thus, there are coastal as well as inland types and the zone usually adjoins the MFZ. But, again, the Outer Fringe is broken into many pieces and in some areas is so sharply definable that there may be no gradation to it from an Inner Fringe Zone.

A characteristic sharpness of the OFZ's limits reflects its high regional and moderate local isolation. House distributional patterns are mostly clusters of spots with occasional short lines. So settlers commonly have some one near in two or three directions but as often it may be in only one direction or none.

In addition, the accessibility of the Outer Fringe Zone is poor. Usually there is no inter-regional transport available though an occasional spot or limited area might have one line. Local travel is limited to road, or possibly by water seasonally, for most needs but is restricted to one or two directions. Some of this isolation is relieved by the possibility of aircraft being chartered but this may be expensive, require some movement on the ground, or involve long waits as well.

For the most part the OFZ is unsuitable for new settling. There are too few permanent residents and there is too little accessibility for additional settlers to obtain the emergency or short-time help they would be likely to need. Permanence could hardly be expected. However, a great expense per new settler could be as transport lines, services, and subsidies probably would be expected (or supplied) and these costs alone would be discouraging.

The Outermost Fringe Zone (OMFZ)

At the extreme edge of the world's populated area is the Outermost Fringe Zone. In Norden it is a series of rather oval or circularly-shaped pieces in inland locations whereas in Normam the OMFZ is composed of a number of irregularly shaped parts split up by lines of Outer Fringe Zone and is along a few coasts as well as inland.

Settlers in the OMFZ have the maximum degree of isolation possible, it being high both regionally and locally. Dwellings are commonly widely separated singles though there are occasional small clusters at points where some of the isolation is relieved. But a very high proportion of the zone is uninhabited, a large percentage of its population is native, and much of the land is not even used seasonally.

There is little accessibility. Almost no inter-regional transport is available (although inter-continental commercial aircraft cross some sections daily). Most local movement is limited to a few trails and to seasonal shipment by boat but a few widely separated points in Normam are served by commercial airplanes operating on regular schedules.

The Outermost Fringe is the zone of maximum isolation and, there-

fore, of greatest difficulty for any new settling. In general, it should be avoided because the expense in people, time, and money would be too great for any accomplishment (excepting, of course, a possible military or political advantage whose costs are seldom justified by usual procedures). On the other hand, thought might be given to an intentional retreat of people from the OMFZ to determine if even the maintenance of present-day settlement there is feasible economically.

Footnotes

¹ It is recognized that differences in an area could affect the 1 ½-mile limit. Some might be: the absence of communication facilities, the physical condition of the person giving the aid, the physical characteristics of the land to be traversed, the time of day or season, and the weather. Some of these have been allowed for insofar as possible and we stress that the value of the measure is in the idea of a maximum allowable time rather than a specific measure. Of course, it would be best if all variables could be included in a measure of each dwelling but we wonder if the effort would be worth the results.

² The classification needs to be redone to separate more clearly the groups of clusters and the clusters of groups by different wording.

³ Excepting a map showing the location of exchanges in Sweden, where nearly every residence has a telephone anyway.

Part III

NORDENIC FRINGE OF SETTLEMENT ZONES AND
RURAL SETTLING PROCEDURES

Chapter 5

Finnish Zones and Procedures¹

To some social scientists Finland is best known for the forced resettling of more than 477,000 of its people, 85 per cent of which was accomplished between 1944 and 1948 when the Finnish economy was strained sorely by a prior five years of war and by very high forced payments to the Soviet Union. However, relatively few people are familiar with Finland's continued experiences in new rural settling up to the present time. Actually she is one of the presently rare places where there is a regional advance of the edge of the inhabited world and where, in the same country, there are also areas of local advance and of regional stability of settling. Thus, from Finland's new rural settling various kinds of guides could be determined for similar activities elsewhere, at least in the high latitudes.

Application of the measures of isolation to Finland discloses a large fringe of settlement region. It is the northern two-thirds of the country, an area 460 miles (740 km.) north-south by 135 to 300 miles (217-482 km.) wide. Within this are four zones of varying shapes and orientations, different from other geographical delineations related to Finnish settlement but which generalize details of isolation and which have counterparts in Nornam. This Discontinuous Settlement Region grades into the one of Continuous Settlement through a narrow strip, shaped somewhat like an inverted U, between latitudes 62°N. and 64°N. The eastern half of the boundary is narrow and easy to recognize from the air but the western half is more arbitrarily defined and thus is not so easily distinguished by eye.

This CS/DS limit is the only major separation of type of settlement in Finland, according to the measures used here, because there is no Unpopulated Region in the country.

Continuous Settlement Region

The CS Region is roughly the southern third of Finland (Fig. 5-1). There settlement is oldest, the first settlers dated at about 7000 B.C. in the southwest.² There, too, man has modified the landscape the most with clearing and building.³ Now population distribution is continuous over large uninterrupted areas.⁴ The few uninhabited spots are small and several of them are only the central parts of the larger of the many lakes (Fig. 5-2). Rural densities are more than 125 persons per square mile (48/km.²) in large parts of the western half and most of the rest has densities of 25 to 125 people per square mile (c.10-48/km.²). This is an area in which much land is cleared for agriculture and which appears to be completely occupied and in use, including the forests.

Most of Finland's main urbanized areas have been and are in the CS region.⁵ Included are the country's first four cities in population: greater Helsinki on the south coast with 600,000 inhabitants, greater Tampere in the middle west and Turku on the southwest coast with 160,000 each, and Lahti northeast of Helsinki with 63,000. Of Finland's 15 cities with populations of 20,000 to 55,000 the CS region has 12.

This close population also has fair to good accessibility. Most residences are within 18 miles (29 km.) and all are within 25 miles (40 km.) of a railroad, in contrast to 12-13 miles (19-21 km.) in comparable Norwegian and Swedish regions. On inter-regional and local railroads all-weather bulk transport is available from nearly all points in the region to Helsinki, the



Fig. 5-1

capital and chief port, within a maximum time of nine hours. In addition there is a rather dense road net. Most inhabited places are less than 20 to 30 miles (32-48 km.) from an inter-regional highway, many of which are now paved, and every residence is within 5 to 8 miles (8-13 km.) of local roads going in three or four major directions. Further transport is available by ship. Lake steamers service the eastern part and some of the western section of the region during the summer while the western two-thirds of the region is within 150 miles (241 km.) of southern and southwestern ports open to ocean vessels from eight to ten and a half months each year.

In short, the isolation of the CS Region is low and the degree of permanence of settlement, however measured, is high.⁶ Anyone can receive or render aid quickly from or in nearly any direction. Experienced settlers are nearby. New settling, if land for it is available, may be carried out as cheaply and successfully as anywhere in Finland; the problem is to find the land without reducing dangerously the present sizes of CS units of occupation. But such is not the case to the north in any of the zones of the Discontinuous Settlement Region.

Inner Fringe Zone

At the southern edge of the DS Region is the Inner Fringe Zone of settlement (Fig. 5-1). It is a roughly triangular area about 300 miles (483 km.) long on the west at the Gulf of Bothnian coast. In the southwest the zone is 75 to 110 miles (121-177 km.) wide but at the Gulf's head only about 25 miles (40 km.). It extends southeastward across middle Finland but at the Soviet Union's border is only 7 to 20 miles (11-32 km.) in width.

Near the Gulf the population is densest and the settlement the oldest.

The pattern is one of interrupted areas which include unevenly spaced cities of 15,000 to 52,000 persons; all of the towns have continued to grow, and some rapidly, in the recent decades. However, in the inland parts the population is predominantly rural and the distributional patterns have some linearity.

From the air in summer the zone appears to be small areas of tan and green rectangular fields, laced together by the irregular dark lines of streams and white lines of roads. These are separated by uninhabited cells, composed of irregularly shaped dark-tan swamps and black forests. In winter local isolation appears to be exaggerated but the lines of fences and timber cutting help show the uninhabited cells to be relatively small. Actually they vary from two by four miles (3-6 km.) and closely spaced to more than five by fifteen miles (8-24 km.) and variously spaced (Fig. 5-2). In the inhabited areas most of the people are agriculturalists in combination with forestry or, occasionally, fishing.⁷

Available transport makes both the regional and local isolation of the Inner Fringe low. Most of the people are within about 20 miles (32 km.) of railroads providing all-year bulk transport in one or two directions (Fig. 5-3). By a coastal inter-regional line and two others inland, daily direct-car passenger traffic is only three to eight hours' travel from the zone's most distant parts to the CS Region and 14 to 17 hours to Helsinki.⁸ Additional local lines run east-west and some are served by diesel rail buses. Even with these, however, two areas in the central western part of the zone, northeast and southwest of Haapajärvi, include some settlers 30 to 35 miles (48-56 km.) from a railroad; these tracts would be islands of Middle Fringe Zone but for the roads there.

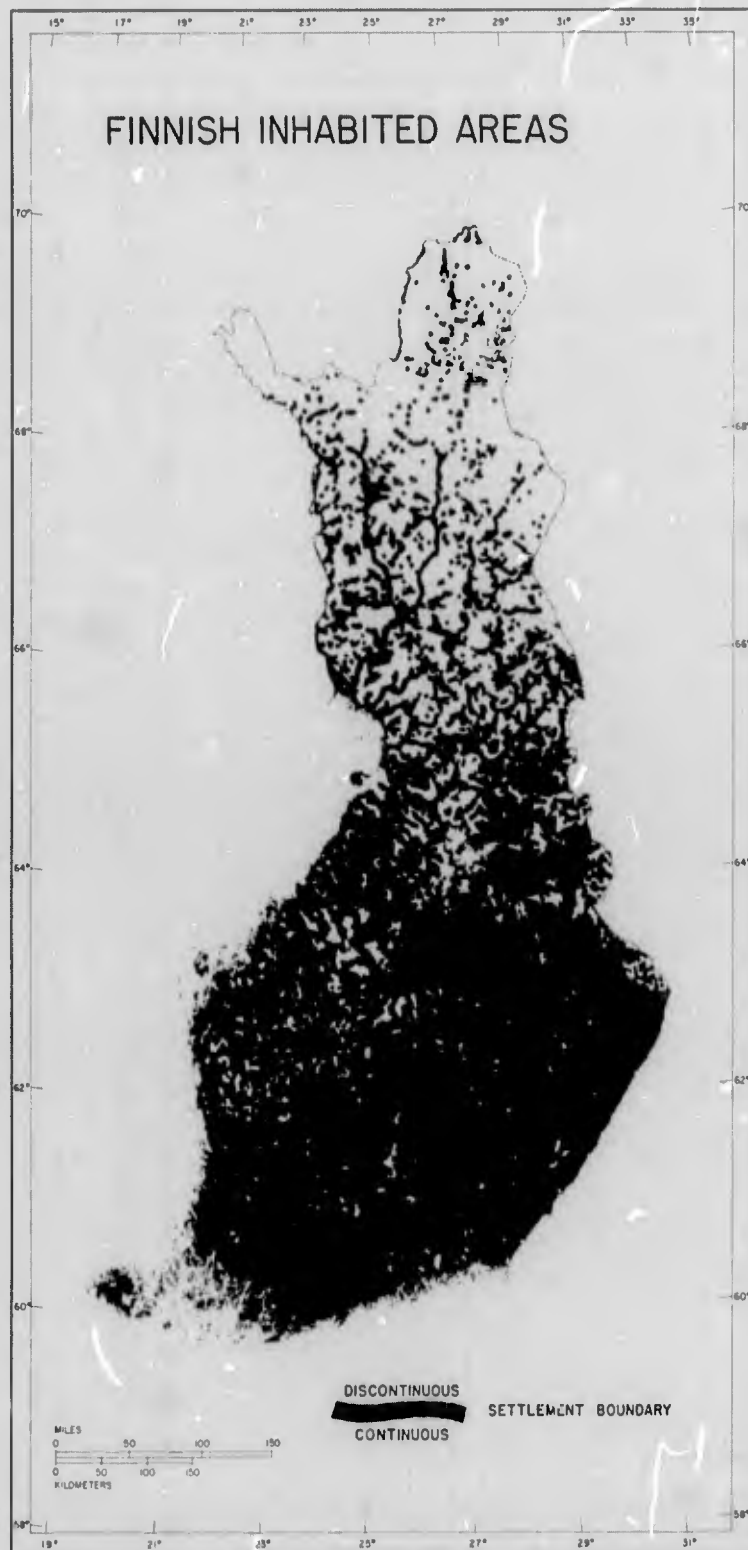


Fig. 5-2

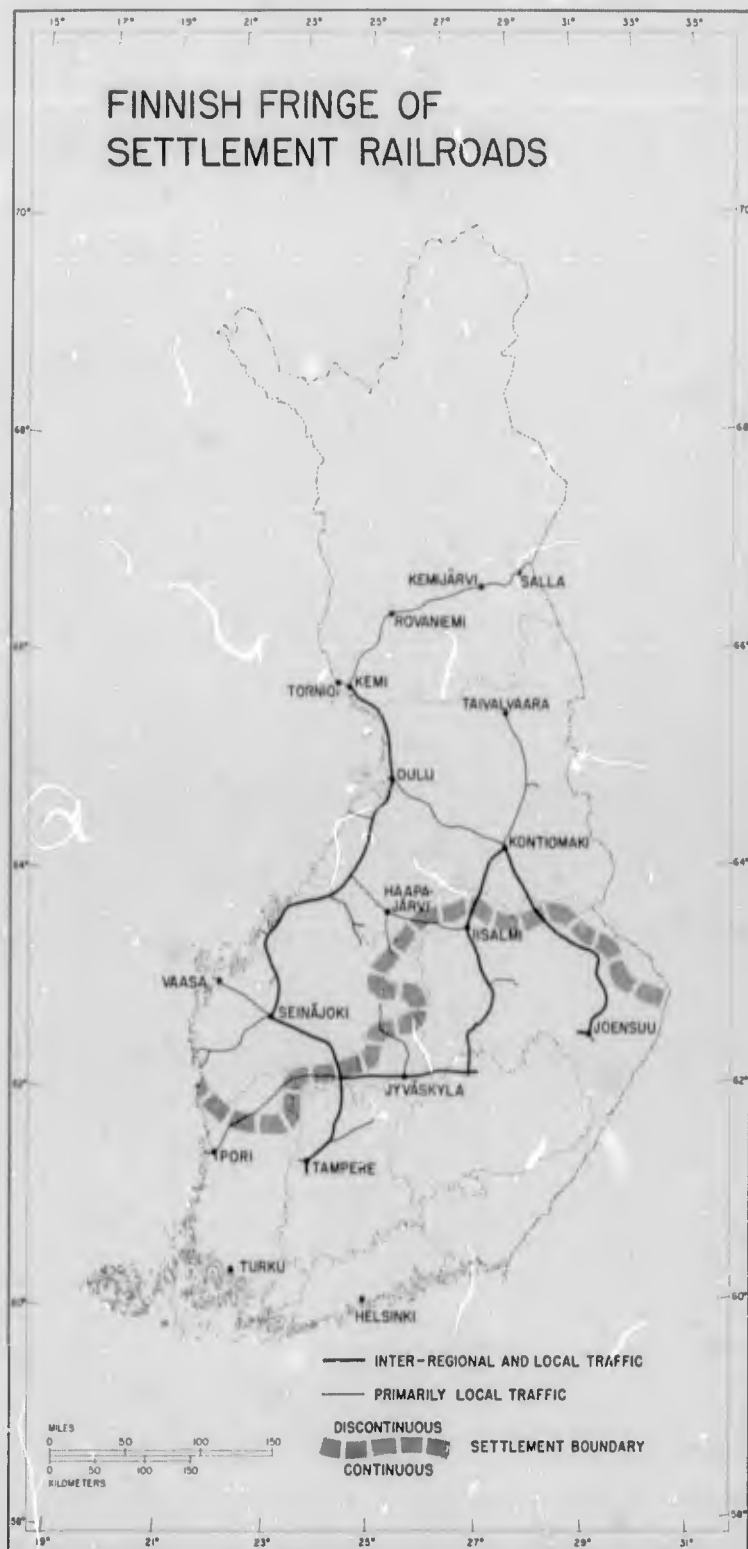
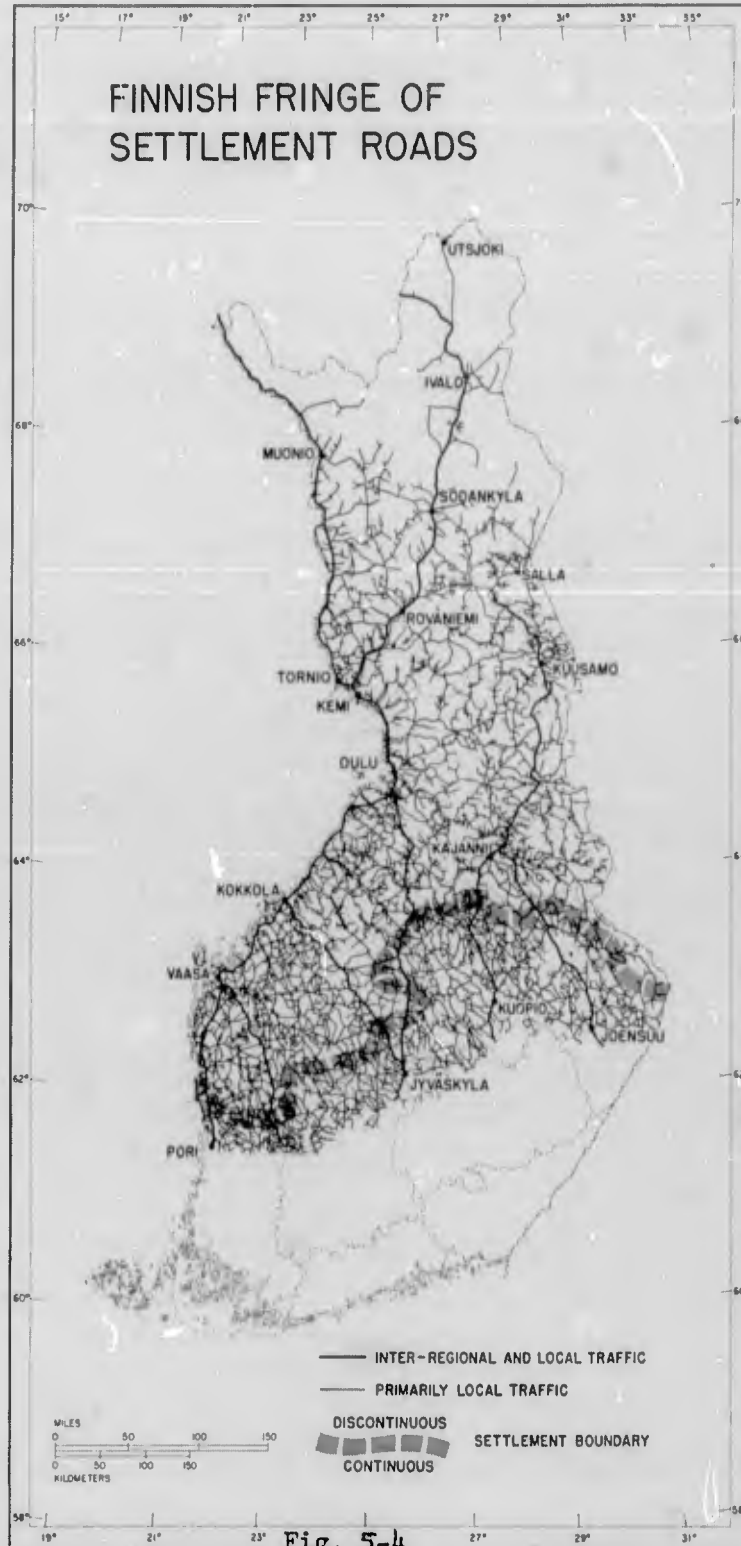


Fig. 5-3

A dense road net adds accessibility throughout the zone (Fig. 5-4). Inter-regional traffic may move the length of the coast and on three tributary highways which are from 40 to 75 miles (64-120 km.) apart in the southwestern section. Farther inland another inter-regional road goes through Kajaani, with a tributary to the southeast. Most are unpaved excepting occasional strips near towns but more paving is planned. Also, most Inner Fringe settlers are within five miles (8 km.) of local gravel-surface roads running in three or four major directions.⁹ Equally important is the fact that everyone in the Inner Fringe is less than 10 miles (16 km.) from all-year daily bus service.¹⁰

Water and air transport supplement other service. Inter-regional and local freighters serve the zone's Bothnian coastal cities six to eight months each year (the ice-free season). Oulu, Kemi, Kokkola, and Vaasa are the principal ports with the first two handling, respectively, one million tons and one-half million tons of goods a year.¹¹ In summer, streams, like the Kemi River, are used to float several hundred thousand cubic meters of logs, most of these originating in the Middle Fringe Zone.¹² Also, the main ports and the inland town of Kajaani have all-year daily airplane service to Helsinki in three hours or less flying time.

After World War II Finland was forced to learn much about resettling and new rural settling. More than 477,000 persons were moved as a result of the Soviet Union's taking three eastern areas (and one in the south, Porkkala, returned in 1960); many details of the evacuation and resettling movements have been published.¹³ Although most of the displaced population eventually resettled in the CS Region, considerable experience was gained in



the Inner Fringe Zone. It was there, particularly within fifty miles of its western coast, that many evacuees were placed; final resettlement took place throughout the zone with some concentration in its southwestern part. Of interest is the rather close correspondence between parts of the zone's northern boundary and a line, called the limes carelianus, north of which displaced Karelian farmers could be not resettled unless they were willing; this limited the northward movement of the main numbers of resettled people. However, since that time of resettling additional agricultural settlers have gone in, particularly in the eastern half of the southern margin and north and south of the port of Oulu.¹⁴ Thus, the zone has two decades of modern settling history which could prove useful in Nornam.

In general, new group or individual settlement may be introduced in the remaining better parts of the Inner Fringe with probable good possibilities of permanence. Experienced settlers and transport routes are all ready available so advice, supplies, and physical aid may be obtained quickly and, what is deemed important, from several directions. As usual, however, the best land is all ready occupied.

Middle Fringe Zone

Next northward is the Middle Fringe Zone. This is an inland belt, 125 to 165 miles (201-265 km.) wide, extending from the Swedish-Finnish border southeastwards 175 to 275 miles (281-442 km.) to the Soviet border (Fig. 5-2). Though somewhat larger than the Inner Fringe Zone its population is much less. Also, towns are fewer and smaller; the largest is rebuilt Rovaniemi with about 20,000 people¹⁵ and one other town has 4400 but the average agglomeration includes fewer than 500 persons.

Throughout the zone settlement is quite discontinuous. Some of it dates from the first half of the 17th century.¹⁶ The prevailing distributional pattern of inhabited areas is groups of clusters including some long and short lines and, in the western half, some spots. Probably half of the area is uninhabited but the individual unoccupied units are quite irregular and vary greatly in size. In the southern part they are three to five miles (5-8 km.) wide by 10 to 30 miles (16-48 km.) long and scattered; in the north they are from four to five times as wide and long and are usually back from the rivers (Fig. 5-2). During the wars of the 1940's there was much destruction in the Middle Fringe Zone and northward and since then there has been practically complete reconstruction of buildings and resettling of population. The latter includes relocating all of the people displaced as a result of the loss of the Salla sector to the Soviet Union. Further, there has been and is much new rural settling now marked by buildings under construction, by partly cleared farms, and by new drainage ditches and roads.¹⁷

These new settlers have decreased the local isolation of population. They also provide a great reservoir of recent settling experience. Though little known outside of Finland,¹⁸ the lessons of resettling and especially of recent new settling could be valuable in the planning for new Norramic settlement.

The Middle Fringe Zone's regional and local isolation are moderate to low. Just two rail lines extend into the zone (Fig. 5-3). On them only local passenger service is available, mostly by daily rail bus. Further, from Rovaniemi northeastward passengers can go only to Kemijärvi and freight to Salla; from Salla to and across the Soviet border the line is unused.

In general, most of the Middle Fringe is at least 20 to 40 miles (32-64 km.) from a railroad.

Some of this isolation is relieved by roads (Fig. 5-4). Two inter-regional highways cross the western part and one the eastern. They are wide, graveled, maintained regularly, and open all year. All other roads are primarily for local traffic. Half of these are nationally administered, graveled, and two-cars wide; there are free ferries at river crossings where during summer the competition with floating logs is often keen. The remaining roads are maintained by local agencies, have no special surfacing, are one-car wide, and are often the dead-end type. On all roads at the eastern end of the zone traffic across the Soviet border is prohibited.

In the southern Middle Fringe most settlers reside close to a road and movement in three or four directions is possible within 10 to 15 miles (16-24 km.) of a home. However, in the northern third one must travel farther to go in more than one direction, a few settlers are not right on roads, and some routes are closed occasionally. Still, fresh milk is picked up regularly from farms under production contracts, traveling stores move regularly in the more densely settled parts,¹⁹ most of the zone's settlers are less than 15 miles (24 km.) from daily buses providing local service to the zone's town, and there is a telephone in each agglomeration of dwellings. This is a modest degree of access and communication for these people and proposals to build more roads in the zone are under consideration.²⁰ But the Continuous Settlement Region is 10 to 24 hours away and often by indirect routes.

In general, the Middle Fringe Zone is separated sharply from the Inner Fringe Zone. Part of the boundary corresponds with the southern limit of

what is called "primarily underdeveloped Finland".²¹ Another part is where the characteristics of a frontier increase in number and intensity northward.²² The whole southern limit of the zone corresponds closely with a modern economic-geographical regional line which distinguishes areas by combinations of shares of Finland's population, gross industrial production, cultivated land, or forested area.²³

As a whole there is room for new rural settling in the Middle Fringe Zone. From recent experience it has been seen that the process must be quite selective with regard to both area and people and the action cautious and well-timed where new group settling is desired. Even more care is required for new settling by individuals, if they are to be encouraged at all. In some parts of the zone there probably is, especially in winter, too much regional and local isolation and too little detailed knowledge of sites to prevent the waste of money, energy, and time in new rural settling. But in other parts, especially where the recent Finnish experiences of colonizing poorly drained land may be applied, there are good chances of permanence. In all localities it is clearly a long-time investment, probably at least three decades, to get new settlement started. More detailed expressions of these generalizations are given below in the discussions of the sample study areas.

Outer Fringe Zone

North of the Middle Fringe is the Outer Fringe Zone. Its general shape is an inverted T. The crossbar is 175 to 275 miles (281-442 km.) east-west and about 7 to 50 miles (11-80 km.) wide while the stem is 170 miles (273 km.) north-south and 20 to 45 miles (32-75 km.) wide (Fig. 5-1).

Inhabitants are few and the predominant distributional pattern is clusters of spots and occasional short lines. In only a few places are the people in villages, the largest of which has 200 inhabitants. In fact, discontinuity of settlement is so great that less than 25 per cent of the zone is inhabited. The uninhabited areas are irregularly shaped, 10 to 20 miles (16-32 km.) across and tens of miles long (Fig. 5-2). Isolated single residences are common, and everyone is beside water and/or a road in these lower elevations of the north Finnish uplands. Many of the residents are Lapps.²⁴

The zone's regional isolation is high and its local isolation moderate. There are no railroads and road transport is limited. Two north-south roads, barely the inter-regional type, extend along the western edge and through the middle section. Local roads commonly are one-car wide, winding, poorly surfaced, widely spaced, the dead-end type, and do not reach all settlers.

Fortunately buses are routed over the principal roads daily excepting in the extreme north. There, winter bus service from Norway is two or three times weekly, so settlers generally are no more than 15 miles (24 km.) from a bus line. An exception is the village of Ivalo which now also has airline service on an all-year route between Rovaniemi and Kirkenes, Norway. However, additional isolation develops seasonally in the zone because of drifting snow, freezing and thawing of rivers and lakes, and thawing and heaving of the ground; these especially affect those dependent on boats or trails to reach their homes.

In only a few southerly parts of the Outer Fringe Zone have new settlers been introduced recently. For the most part they are in groups which are

quite isolated and much smaller than the colonies in the Middle Fringe.

Although it is too soon to tell the result, this action is clearly requiring a maximum effort by every settler, considerable sacrifices, or comprehensive financing--in some places all three--and still the permanence of the settlements is in doubt and is likely to remain so for several years.

In view of the regional and local isolation of the Outer Fringe Zone, it is probably unwise to introduce new settlement there now. One may even question if all those persons now there should even be encouraged to stay. The chances of permanence are slight where it requires a day and more to reach the CS Region by indirect and often difficult routes and where emergency requests for help must go unanswered for at least several hours.

Outermost Fringe Zone

Along parts of Finland's northern border is the Outermost Fringe Zone of settlement. There are four irregularly-shaped areas, three of which extend northward into Norway and the fourth eastward into the Soviet Union (and probably then straight southward) (Fig. 5-1). On the Finnish side the parts vary in size from 25 by 35 miles (40-56 km.) each to 15 to 30 miles (24-48 km.) by 105 to 160 miles (169-257 km.).

This zone is the extreme fringe of the inhabited world with the maximum isolation of population. Only a few people are present. When mapped most residences are in widely spaced spots though occasionally they form short broken lines (Fig. 5-2). It is common to find single dwellings and poorly defined clusters of two or three families whereas agglomerations of 50 people are unusual. Every permanent residence is alongside water.

Regional and local isolation are both high. About 85-90 per cent of

the zone is uninhabited; all four areas are high hills or low mountains.

There are no roads or railroads. In the northeastern area snowmobile service is available three times a week in winter. Otherwise settlers move in summer by foot, with animals, or perhaps by tractor. A few people are within 20 miles (32 km.) of a road but most are farther. Thus, travel time both within and from the zone's parts is unpredictable at many times of the year; just to travel to an adjacent zone might take a day or more. Many settlers are dependent upon only themselves in case of need because they are without means of communication as well as circulation.

It is clear that this is the zone of maximum difficulty for any settling activity. The question is more whether the settlers there should be encouraged to move out rather than if there should be any new settling.

Comparison With Other Regionalizations

Finnish geographers were among the earlier members of the profession to examine the morphology of their national rural and urban patterns of settlement.²⁵ They also have been leaders in the development of the geography of settlement²⁶ as well as in geographical regionalizing of various elements of the landscape.²⁷ These traditions have been continued to the present generation, a very active one, of Finnish colleagues.²⁸ Yet, no regions or zones are known to have been delineated for the same purposes or on the same bases as those used herein.

Therefore, some discordance might be anticipated between the locations of the CS/DS line and other regional boundaries while great discordance should be expected when the zonal limits are compared with previous divisions of Finland. Such is the case. "Peripheral" or "frontier" Finland has long

been considered to be the northeastern part of the country whose edge extends from near the port of Oulu southeastward through approximately the city of Joensuu; this crosses the CS/DS limit at a high angle, representing marked disagreement in position. "Underdeveloped" Finland is northeast of a line from midway between Oulu and Vaasa and running southeastward through the Jyväskylä district, another regional boundary sharply discordant with the CS/DS line. In fact, only in the western third of the latter is there a semblance of correspondance with the 1925 map of morphology of settlement²⁹ and there is even less with the 1960 map of locations of settlements.³⁰

In general, the fringe of settlement zonal demarcations show even less correspondence with sub-regional limits on previously drawn maps of cultural elements. Exceptions are the previously-mentioned modest correspondence of the IFZ/MFZ line and the limes carelianus, the parallelism of that zonal separation and the edges of "frontier" and "underdeveloped" Finland (but at distances of 25 to 150 miles (40-249 km.) eastward), and the near coincidence of the IFZ/MFZ boundary and an economic-geographic line.³¹

Such overall lack of agreement between the regions and zones outlined herein and by others should not be discouraging. As Keinänen has stated: "Research on regional differences of current development is still tentative and unorganized in Finland".³² Further, the search here is not only for significant delineations in one country but also for mapping which may underwrite inter-continental transfers of knowledge.

Zonal Transfers

Employment of the measures of isolation which are significant to planning for new rural settling in the high latitudes disclose a Finnish fringe

of settlement region comprising the northern two-thirds of the country. Within the region are four zones whose limits are conformable where national boundaries are crossed into other Nordanic countries.³³ Knowing that similar zones have been recognized in Nornam the planners there might expect to transfer with some success, between zones of the same type, selected settling practices which have contributed to a potential high degree of permanence of Finnish settlement.

Finnish Middle Fringe Zone Sample Colonies

Such procedures have been delineated from general study of all modern Finnish settling and, especially, from detailed research on six sample areas in the DS Region. These six are colonies selected to provide representative variety in time of starting, location, and other physical and cultural characteristics essential to planning for new settling in a zone of low to moderate regional and local isolation (Fig. 5-5). Selection was purposely confined to the Middle Fringe Zone because 1) this is the area of greatest new Finnish settling at the present time, 2) the differences in problems between new individual and group settling are more sharply contrasted in the MFZ than in the Inner Fringe, and 3) because Alaska, one of the Nornamic areas to which experiences are to be transferred, has no IFZ. Though the six sample colonies have been examined in the field and by office-type analyses several times in a seven-year period, some results are only provisional while others are inconclusive so continuing observations must be made until conclusions are dependable. Too, some actions now stated by Finnish planners to be mistakes may be proved as useful over longer periods of time.

Location from Rovaniemi		Distance By:		No. of		No. of Displaced Persons Families	Area (Hectares)	Year Planned
Dir.	Line	Straight	Road	Farms	Home Sites	Total		
Velijoen	S	32 km.	38 km.	49	12	61	10,707	1951
Käpustavuoman	WSW	65 km.	82 km.	29	0	29	7,900	1952
Pesmajärven	NW	83 km.	128 km.	14	1	15	2,646	1946
Lisma-aavan	NNE	90 km.	106 km.	40	0	40	8,504	1953
Puupuolivärvikon	ENE	113 km.	143 km.	66	20	86	8,504	1948
Urriaavan	E	152 km.	176 km.	18	0	18	3,987	1955
Averages of the 59...				20	10	**	3,636	***
Totals of the 59...				1162	319	636	214,669	

* Computed for the 56 colonies having one or more farms.

** Computed for the 33 colonies having one or more homesites.

*** The average of 28 is not representative because two-thirds of the total Displaced Persons were in six colonies which had more than 50 each.

Fig. 5-5

CHARACTERISTICS OF FINNISH MIDDLE FRINGE ZONE SAMPLE COLONIES IN RELATION TO AVERAGES OF
59 MORE IMPORTANT COLONIES FOUNDED IN N. FINLAND BETWEEN 1946 AND 1958

In northern Finland (Lappi Province) 59 more important colonies were started between 1946 and 1958. Of these the samples selected are: Valijoen, Kapustavuoman, Pasmajärvi, Lisma-aapa, Puupuolivarvikon, and Urriaavan. This order of listing is a geographic one which goes from nearest to the MFZ/IFZ border and to Rovaniemi, major city of northern Finland, in clockwise order and increasing distance from both the city and the zonal boundary (Fig. 5-5). In addition to intra-regional isolation, the selection covers colonies varying in size between 15 and 86 residential units, in number of farms from 14 to 66, in number of families of displaced persons from 0 to 86, and in area from 2,600 to 10,700 hectares. A total of 1162 farms and 319 homesites, including 636 displaced-persons families, are represented.

Although new rural settling has characterized Finland since the start of this century, the principal activity has been, of course, since World War II. Of the 59 farms noted, 43 were started between 1945 and the end of 1950. After 1953 only four were begun (three in 1955 and one in 1958). New settling continues but at a somewhat slower pace; the country's principal effort is focused on maintaining the resettling which was forced on the Finns in the immediate post-World-War II years.

It must be recognized from the first that new settling in Finland, like in any nation, takes place because the government wishes it. Either national laws foster new settling or a national administration permits it. Finnish new settling is related to the economic needs of more production of wood and milk products, to the military desire of a "buffer zone" along the eastern border, and to the political desires of a party gaining votes by subsidising more settling.

It is not surprising then that, as one Finn said, "Settlement in Finland has always been a battleground of political ideas." Nor is it confounding that Finnish officials in responsible positions have varying attitudes about the advisability of encouraging settling in northern Finland. But it was forced on the Finns there and elsewhere. And it went on. However, with such an initiation one can hardly expect to justify the actions entirely on economic bases.

Administration

Administration of the settling is from national to local levels. The principal agency (Asutushallitus) is headquartered in Helsinki and is the center for final approval of action. Next are the regional commissions (Jordispositionskommissioner), 26 in number, which are doing the planning of colonization under the charge of the land Utilization Act of 1959; There are six of these in Finnish Lapland alone. A commission is composed, as in Rovaniemi, of a surveyor, an agronomist, and a forester. These are permanent members and to them are added, at the commune level, technicians and two of the settlers to act on local matters. Their principal tasks are to plan for new settling and to improve the economic bases of existing farms.

The boards administer the various colonization laws. These vary. The 1945 settlement law was only for Displaced Persons (DP) and ex-soldiers (primarily Karelian resettlement); the 1946 law was mostly for the same people but especially war widows and orphans; the January 1950 law was the first permitting land acquisition by persons other than those two types.

The boards also draw up the contracts with individual settlers. Each agreement is divisible into two periods of time: the first five years and the next 31 years. During the former the state retains ownership and the settlers have to perform certain tasks, described below. If these are done satisfactorily the farm can then be bought and the settler has 31 years in which to pay the sum agreed upon; however, if the board is satisfied after five years the settler must contract to purchase after 13 years on the property.

The critical nature of the first five years is readily apparent. During it the state grants most of its subsidies, called premiums. And in that period the local board can note the qualities of a settler by his accomplishments according to the first-five year plan. An example of this plan might be:

First year: Build sauna and well, acquire materials for construction of residence, clear area for residence, and clear .5 hectare of land for cropping.

Second year: Build residence so it can be used for protection against rain or snow and clear another .5 hectare of land for cropping.

Third year: Complete residence, acquire materials for construction of barn, and clear another .5 hectare of land.

Fourth year: Do principal construction work on barn and clear another .5 hectare of land.

Fifth year: Complete the barn and clear another .5 hectare of land.

Although this period has proved to be too short in many instances it has provided the local boards a testing period during which the intentions of the settlers' uses of state funds could be measured with a fairly high degree of accuracy. Furthermore, numerous settlers have completed these requirements in only three years.

Original recommendations for the creation of a colony come from one of three possible sources: 1) a colonization supervisor (of which there are 20 in Finland), 2) a regional commission, and 3) a local board. When approved the regional commission obtains the land; recently this has been mostly state-owned but privately-owned parcels have been bought where needed. Selection was based upon an area's location and its physical qualities. The latter are known usually as a result of prior mapping by two societies, one concerned with swamps and the other with mineral soils. Soils, drainage, vegetation, and surface configuration are mapped by university students representing the societies; particular attention is given to the moisture present and the qualities of the soil and forest. Of course, local officials are familiar with areas selected and more detailed surveys are often necessary for the specific planning. In general, though, the intra-regional location appears to be of small significance because the more important recent 59 colonies are all over Northern Finland as exemplified by the locations of the six examples (Fig. 5-5).

Selection of Settlers

Selection of the settlers depends initially upon their applying. The primary qualifications depended upon the specific law in which application is made. But of major importance was that applicants were local residents. This means movements to new colonies were over short distances, perhaps maxima of 20-25 miles (32-40 km.). The advantages of this are that it contributes to the group quality of the settling, the applicants usually are known to the local boards, and the new settlers are familiar with the area.

Settling Characteristics of the Finnish Middle Fringe Zone

Sample Colonies to Mid-Summer 1960*

Characteristic	Väli- joen	Kapu- sta- vuoman	Pasma- järven	Lisma- aavan	Puupu- oli- varv.	Urri- aavan
Date planned	1951	1952	1946	1953	1948	1955
No. of farms analyzed here	49	29	16**	40	66 ⁺	18
No. of persons/farm						
Mean	(7) ⁺⁺	(4)	(5)	(7)		6
Range	(8)	(0)	(2)	(13)		10
Farm size (hectares)						
Mean	218	275	105	213	55	221
Range	180	240	90	150	370	120
Arable land/farm (hectares)						
Mean	28	36	21	20	29-35	31
Range	30	32	24	18	59	28
Forest /farm (hectares)						
Mean	144	173	66	162	105	145
Range	120	140	40	100	200	60
No. of months between contract signing and start of build- ing construction						
Mean	28	6	45	10		7
Range	52	14	101	37		16
No. of months to build:						
Resid., Mean	12	10	32	10		11
" , Range	21	18	63	18		21
Sauna, Mean	10	6	23	3		12
" , Range	37	27	49	8		36
Barn, Mean	14	22	32	5		9
" , Range	14	35	54	4		10
No. of parcels with:						
Resid., Sauna, & Barn	12	23	6	15		18
Resid. & Sauna	8	3	2	8		
Resid. only	4	2	2	8		
Resid. & Barn (& Outhse.)	9	1	2	5		
Sauna, or Barn, or Outhse.	3					
No Residence	25		4	4		

Fig. 5-6 (part)

Characteristics	Väli-joen	Kapu-sta-vuoman	Pasma-järven	Lisma-aavan	Puupu-oli-varv.	Urri-aavan
No. of farms bought	10	14	1	3		
No. of farms w/cold farm ^{##} prem.	33	20	5	25		18
No. of farms w/clearing prem.				35		
No. of farms w/forest sales	37	26	9	36		17
No. of farms w/extended contract	33	4	6	14		17
No. of farms w/changed ownership	12		2	1		

* These data are from several sources but primarily from the Colonization Board (Asutushallitus) for the Province of Lapland, located in Rovaniemi.

Grateful appreciation is extended in Fil. Lic. Lars Johnsson, formerly of the Stockholm School of Economics, for the collation and analyses of the data after the collection of them in the field.

** The discrepancy between this number of parcels in Pasmajarvi Colony and the 15 indicated in Fig. 5-5 can not be explained at this time; there may be an error in the earlier records or another unit may have been added to the original plan.

+ The data for Puupuolivarvikon Colony are either incomplete or mixed with those of another colony nearby so that complete comparisons can not be made.

++ Figures in parentheses are only suggested means because of the incompleteness of the data.

No allowances are made here for differences in quality of the various stands of forest in a farm; the parcels of forest in each farm are located, sized, and shaped on the basis of quality of the trees so as to generally distribute this resource evenly and in relation to the amount of arable land.

Cold farm is the Finnish term for a new farm created entirely on land in its natural state.

Fig. 5-6

In general the families selected have been large. To Finnish sociologists the northern part of their country is known as a "very fertile area." At the six samples four to five children per family was common but the ranges were more than double this figure (Fig. 5-6). At other colonies, 11-13 children were present in several families.³⁴ It is these numbers that draw the criticism of some officials. They bemoan the costs of education but, most of all, they worry about the future when there will be too much pressure on the forests and land. It is also argued that the greater responsibility of a large family when initiating settling puts too much strain on the adult settlers. What a suitable size is depends, of course, on the age and sex composition (as well as psychological make-up) of a family in relation to the proposed occupation. Local boards have taken these into account as much as possible but if the subsidization of milk should be reduced or new trade policies be adopted the boards will have to reexamine family size and structure with respect to selecting new settlers.³⁵

Form of Settlement

A colony's design is the work of its local board. The major effort goes into five things: 1) roads, 2) drainage lines, 3) farm layout, 4) residential sites, and 5) the designation of common forest and pasture, if any. With respect to roads Finnish planners generally agree it is desirable to center a colony on an existing road so as to have both maintenance and the possibility of service by a mobile store (which is permitted to start selling at one kilometer from an existing store). They also feel it is expedient to have internal circulation in a colony by through roads rather than any "dead ends." This is more efficient with respect to upkeep (e.g., snow removal) and daily

use (e.g., pickup of school children and milk). That the desirable is not always attained is demonstrated by dead-end roads in half the sample colonies (Pasmajärven, Urriaavan, and Välijoen). In general, the main roads are built by the state and the internal routes of a colony by local agencies. However, of the individual access routes every settler is responsible for the construction of the last 50 meters (164 feet). This is in keeping with the general Finnish philosophy of providing most, but not all, of what is needed for new settling.

Artificial drainage is essential because all colonies are selected to combine swamp and morainic land (the former for hay and the latter for vegetables and grains). The primary ditches are planned and constructed by the state according to the regional drainage system. The secondary and local ditches are also tied into this plan by a local drainage engineer but the work and cost of construction are dependent upon the settlers involved.

A Finnish colony may include three types of parcels. There are farms, small farms, and homesites. The recent colonies have been predominantly farms but a few included homesites (Fig. 5-5). By Nornamic standards the farms seem big. In the sample colonies the mean size is 55-275 hectares (136-679 acres) with most being about 200 (494 acres); however, many are larger as the ranges in size are from 90-370 hectares (222-914 acres). These include about 25-30 hectares (62-74 acres) of arable land and roughly 125-150 hectares (308-370 acres) of forest (Fig. 5-6). The sizeable ranges from these mean figures reflect the variations in type and quality of swamp and forest. Local boards have laid out farms in attempts to distribute various kinds

of land somewhat equally so variation in size of farm may be anticipated. In addition, though, a separation of parcels should be expected; it is the case and a large number of farms are composed of five to seven separate pieces each, most of which are within 5-10 km. (3-6 miles) of the farmstead.

Residences are seldom sited where the planners consider them most efficiently located. The latter would be at road junctions or closely spaced along a central road where stops for pickups could be concentrated. However, the settlers' choices have been the more expensive scattered locations. This has a parallel in the Matanuska Valley, Alaska where colonists moved homes originally clustered at road junctions.³⁶ Apparently rural settlers can be too close to each other as well as too far apart. More specifically, though, Finnish planners have learned to leave sufficient space next to lakes in colonies that adjoin them. Settlers prefer to have their dwellings on the lake-side of the road for access to the water but, also, must be above the level at which freezing air "ponds" over the lake; therefore, roads need to be placed far enough from the lakes for this compromise location to be attained.

Timing

Timing of the various settling activities is a crucial point. It requires much more study. However, some guides are clear. Main drainage ditches need to be dug two years prior to colonizing to allow water table adjustment and to make other work easier. Main roads should be built by the time of colonizing. Also, Finnish settlers are expected to cut timber for income in the first years so roads are needed to move that product out as well as equipment and materials in. If the ditches and roads are not put in as noted a considerable delay of the start of construction is likely; it must be

remembered that a three-month holdup at a critical time of the year may force an additional wait of up to nine months more. Several of these features are reflected by the 6-45 month delays in the sample colonies (Fig. 5-6) but there are, to be sure, personal characteristics included.

The construction of buildings in the six samples shows the significance of timing. At 58% of the farms the sauna was the first building completed, its mean construction time was 6-10 months and it could serve as a temporary dwelling until the residence could be built. The latter not only took longer to construct but required more money so was put off in most of the contract plans until the second or third years. However, the large size of the families and the fact that the whole family usually went on to the Finnish farm right at the start encouraged completion of the residence as soon as possible and this happened at the sample colonies (Fig. 5-6) excepting Valijoen (where 12 of the residences not built are to be at the homesites in the center of the colony; these were not started even as recently as 1964).

The construction of barns is not shown completely in Figure 5-6. Most of the families needed milk daily immediately after moving in so one or two cows were taken along. For them a temporary barn had to be built and was satisfactory for two or three years. Then the presence of these animals led to the selling of cream in the second or third year, to supplement the income from the forests, and provided the base for a herd from which milk could be sold regularly by the fifth year. This sequence of events was anticipated by the local

boards and, in fact, encouraged and it appears to have served well several of the settlers' needs.

In general the six sample colonies demonstrate the rate of progress in Finnish MFZ settling. Kapustavuoman Colony advanced the most; in eight years nearly 50% of its farms were bought, even though they were largest in size, and only four required contract extensions (Fig. 5-6). Valijoen had, in nine years, about 20% of its farm sold and considerable forestry going on; the fact that three-fourths of the contracts had to be extended and that 12 farms had changed ownership may reflect the time needed by some Petsamo fishermen (DP) to adjust as well as the proximity to Rovaniemi for non-farm income. However, development at Valijoen certainly was delayed by poor timing of road and ditch construction; roads were started in 1950, the year before planning of the colony, but were not opened until 1955 and the ditches were started then and not completed until 1957. Thus, Valijoen really was only three to five years old by 1960. Meanwhile Lisma-aavan and Urriaavan Colonies, the more isolated and newer, showed signs of fast growth by rapid building construction and by most farms registering forest sales; each colony has continued to grow rapidly since 1960.

Pasmajärven Colony appears to be the exception and seemed stagnant by 1960 (Fig. 5-6). It is the oldest, has the smallest number of farms, and has small-sized farms. This may be one of the smaller-size-farm experiments which is now considered unsuccessful by most Finnish planners. Perhaps it started more slowly than other colonies for several reasons but in 1964 the new building construction and new

clearing at more than half of the farms gave reason to believe it is catching up with the other colonies.

The timing of the installation of electrical or telephonic service is not analyzed here in detail. Each is considered quite expensive by the settlers and many farms in the colonies do not have them after ten years of occupancy. At Lisma-aapa Colony special loans were made for electricity and were usually from 80,000-100,000 FMK per farm.³⁷ Most larger hamlets have a phone (the house with it having a clearly visible marker) but the absence of instruments at singles and small clusters, coupled with the fact that many new settlers have only a horse or motorbike for transport, means that many families have a higher degree of local isolation than is apparent at first.

Costs

The costs of Finnish colonization are difficult to assess. Many social and personal costs are not available, some official charges were based on artificial figures, the nation had no choice about settling 11% of its population after World War II, the value of the Finnish markka has fluctuated considerably since 1946, the country was forced into a difficult economic situation by the completely unreasonable requirements of the peace treaty with the Soviet Union, and there have been many technological developments in the two decades since the war. In spite of these, though, selected costs may be useful as general indicators.

A general principal in Finland has been to encourage new settling by helping the settlers pay for it. The program was not designed as a give-away but, rather, as a means of developing individ-

ual pride and initiative while developing the country according to national desires. In keeping with these objectives the state has paid 20-25% of the total cost of a new farm and has loaned the settlers as much as 50% of the rest. Repayment on the loans has been at five per cent annually, three of which was interest; settlers have been permitted to postpone annual payments without losing their places at the judgment of local boards.

Costs of the land have been set on the basis of 1944 valuations. Rough average prices for the buildings have been: 1,500,000 FMK for a house, 1,000,000 FMK for a barn, and 250,000-300,000 FMK for a sauna; loans on these have been for about 50-60% of the amounts. In addition, the settler has been charged from 5-10% of the total expense for building roads and drainage ditches; in northern Finland the main ditches have cost about 500 FMK per meter or 30,000 FMK per hectare while the average road costs have been 3-4,000,000 FMK per kilometer of main routes and 1,000,000 FMK/km. of other types. Further direct charges to a settler have been for clearing; in Valijoen, for example, the clearing of mineral soils was as much as 200,000 FMK per hectare and of swamp land it was 100,000-150,000 FMK/ha. This expense varies, of course, with how much of the clearing is done by a settler's family.

The aid granted by premiums has differed with the circumstances of the individual settlers, the laws under which they settled, their non-farm income, and their initiative. Under the old Land Acquisition Act, now inoperative, a maximum of 630,000 FMK was allowed for a cold farm (one developed on uninhabited and usually unused land) while

DPs and war widows might get as much as 756,000 FMK; these grants were made if the settlers constructed buildings and cleared about 10 hectares of land. But, if they had three or more children when the contract was drawn up they received 5% off the total price for each child and any born thereafter. Under the new Land Utilization Act the cold farm premium was up to 1,200,000 FMK, the clearing premium was 72,000 FMK/Ha., and if the settler had more than two children when the contract was negotiated they received 5% for all children.

By an earlier premium system the payments for cultivating (or clearing) arable land were on a sliding scale. For up to five hectares of cleared land the farmer received 63,000 FMK/Ha., between 5 and 10 it was 56,000/Ha., between 10 and 15 it was 49,000/Ha., between 15 and 25 it was 42,000/Ha., and for more than 25 no aid was provided. Thus, the kinds of direct help given these settlers has varied with several conditions; this explains the great variation in acceptance of premiums at the six sample colonies (Fig. 5-6).

To be sure, there have been indirect subsidies as well. These new farms were based on the production of milk and forest products. But the milk price had to be subsidized greatly. In part this was due to the distance from Helsinki and in part to the inefficiency, at least at first, of milk production. Most farmers have had cream to sell two or three times a week by the third year of settling and many had milk ready for daily pickup by the fifth year. But the small amounts, the number of stops, and the long hauls to local creameries

has put a strain on Valio, Finland's largest cooperative, to not only keep up the incoming flow of milk but also the export of its products, even though they are so high in quality. Yet, without the subsidy northern Finland's milk production probably would collapse.

Another form of subsidization has been the winter work program. Because of the fairly widespread unemployment during the north Finnish winter, the state has granted much money for work to be conducted only in that season. Though the transportation of some materials is easier at that time some of the other activities cost more. For example, the digging of drainage ditches in winter has been from two and a half to three times more expensive than in summer and some of the work on roads has been much more costly. One admits that economical construction is not the only value in the area but indirect subsidies, such as these, make evaluation of the total costs of settling somewhat ineffective.

Conclusions

In total the Finnish settling experiences are quite useful. They provide guides, mostly positive rather than negative, with respect to selection of land and settlers, administration, design of settlements, financing, construction activities, and timing. These are just what are needed in Nornam. Because of the great amount of settling in northern Finland recently it is likely to be of continued great value to Nornamic planners. Certainly experience in the area points to the advisability of use of the best parts of the Middle Fringe Zone by groups rather than individuals. Just as surely, though, the

assumption that a high latitude area can and ought to be settled should be challenged as the experiences in Sweden, just west of Finland, demonstrate.

Footnotes

1. This chapter was initially published in a different form as Stone, K. H., Finnish Fringe of Settlement Zones, Tijdschrift voor Economische en Soci alische Geografie, v. 57, 1966, pp. 222-232.
2. Jutikkala, E., Suomen Historian Kartasto, Second, Revised Edition, Helsinki, 1959, especially plates 1-12.
3. The Geographical Society of Finland, Suomi, A General Handbook on the Geography of Finland, Helsinki, 1952; R. R. Platt (ed.), Finland and Its Geography, New York, 1955; W. R. Mead, Farming in Finland, London, 1953. Of especial interest in the geography of Finland's settlement is Gr no, J. G., Gehofte and Siedlungen in Finland, Fennia, v. 63, 1937, pp. 1-66 and Kalliola, R., Man's Influence on Nature in Finland, Fennia, v. 85, 1961, pp. 9-23.
4. Smets, H., The Distribution of Urban and Rural Population in Southern Finland 1950, Fennia, v. 81, 1957, pp. 1-21 and The Geographical Society of Finland, Suomen Kartasto (Atlas of Finland), Helsinki, 1960, plates 16 and 17.
5. Smets, H. and Mattila, J., Om Utveckling en av T torter och Landsbygd i Finland 1880-1930, Geografiska Annaler, v. 28, 1942, pp. 210-238 and Fogelberg, P., Finlands T torter 1960, Terra, v. 75, 1963, pp. 257-268.
6. Retreat of settlement, however, has taken place in certain areas now considered to be more isolated than formerly. For an example see Jaatinen, S., Expansion and Retreat of Settlement in the Southwestern Archipelago of Finland, Fennia, v. 84, 1960, Part I, pp. 39-65 and Jaatinen, S., Atlas  ver Skarg rds-Finland, Helsingfors, 1960, Plate 15.
7. An excellent summary of the occupations found in the DS region is in Helle, R., Retailing in Rural Northern Finland: Particularly by Mobile Shops, Fennia, v. 91, 1964, pp. 1-120, especially pp. 1-40.
8. Figure 6 was prepared from Maanmittaushallituksen Toimittama, Suomen Yleiskartta (General Map of Finland), Helsinki, 1947, 1/400,000, 12 sheets and analyses of the winter and summer schedules of trains, especially the passenger trains, and annual freight and passenger traffic. For the last see especially the Geographical Society of Finland, Suomen Kartasto, op. cit., plate 29 (maps 5, 6 and 7).
9. Figure 5-4 was prepared by the analyses of Maanmittaushallituksen Toimittama, Suomen Tiekartta (Road Map of Finland), Helsinki, 1962, scale 1/1,000,000, numbers 1-12, supplemented by field observation and analyses of winter-time and summer-time bus schedules and average service. For the last see The Geographical Society of Finland, Suomen Kartasto, 1960, op. cit., Plate 30 (map 1). A variation of the measure of accessibility by road used herein is shown on the map of farms 4 km. or more from roads that are trafficable in all seasons, as a percentage of farms exceeding 2 hectares in ibid., plate 30 (map 5).

10. Bus service is quite important throughout Finland's areas of rural settlement because the number of passenger cars and motor cycles per unit of population is the lowest in all Norden (29 and 21 per 1000 people, respectively, in 1957 compared with the next higher, Norway, of 44 and 38). An interesting expression of this significance is the map of earliest bus or train service in the morning to the nearest large urban center in ibid., plate 30 (map 2).

11. Ibid., plate 28 (maps 5-10).

12. Okko, V., Kemi, Centre of the Wood Processing Industry of Northern Finland, Fennia, v. 84, 1960, part II, pp. 47-61, especially Fig. 3 on p. 55.

13. The Geographical Society of Finland, Suomi..., pp. 381-400; R. R. Platt (ed.), op. cit., pp. 130-135; W. R. Mead, op. cit., pp. 183-204; The Geographical Society of Finland, Suomen Kartasto, 1960, ibid., plate 14; Colonisation Department, Ministry of Agriculture, Colonisation Activity in Finland Before and After the World War II, Helsinki, c1952, mimeo.; Løddesøl, A., Hurtigkolonisasjonen i Finland, Ny Jord, 1941, pp. 1-32; Mead, W. R., The Cold Farm in Finland, Resettlement of Finland's Displaced Farmers, Geographical Review, v. 41, 1951, pp. 529-543; Smeds, H., Post War Land Clearance and Pioneering Activities in Finland, Fennia, v. 83, 1960, pp. 1-31; Vennamo, V. and Jaakkola, O., Finland and Its Internal Resettlement Activity, Helsinki, c1956, mimeo.; Vennamo, V., Some Aspects of Post-War Settlement Activity and Reconstruction Work in Finland and the Principles Adopted, Helsinki, 1959, mimeo.; Waris, H. and Siipi, J., Resettlement of Displaced Persons in Finland, Helsinki, 1952, mimeo.

14. Palomäki, M., Post War Pioneering in Finland, Fennia, v. 84, 1959, pp. 1-23; Smeds, H., Recent Changes in the Agricultural Geography of Finland, Fennia, v. 87, 1962, pp. 1-19.

15. Niiranen, E., The City of Rovaniemi, Capital of Finnish Lapland, Fennia, v. 84, 1960, part II, pp. 63-81.

16. Ohlsson, B., Sirkka, An Agricultural Village Clearing in the Coniferous Forest of Western Lapland, Fennia, v. 84, 1960, part II, pp. 5-20.

17. Smeds, H., Post War Land Clearance and Pioneering Activities in Finland, op. cit., especially Figs. 3 and 4 on pp. 24 and 25.

18. A useful exception is Michie, G. H., Välijoki and Lisma: New Planned Settlements in Finnish Lapland, Canadian Geographer, v. V, 1961, pp. 24-36.

19. Helle, R., op. cit., especially Fig. 15 on p. 93.

20. Jaatinen, S. and Mead, W. R., The Intensification of Finnish Farming, Economic Geography, v. 33, 1957, pp. 31-40.

21. Hustich, I., Finland, ett Utvecklat och ett Underutvecklat Land, Meddelanden från Ekonomisk-Geografiska Institutionen vid Svenska Handelshögskolan, Helsingfors, Nr. 24, 1964, especially Fig. 8 on p. 37.

22. Mead, W. R., Frontier Themes in Finland, Geography, v. XLIV, 1959, pp. 145-156, especially Fig. 5D on p. 153.
23. The Geographical Society of Finland, Suomen Kartasto, op. cit., plate 38 (map 8).
24. The Lapps may now be able to provide some advice during planning for new settling because most of them have given up the nomadic life and now have permanent residences. The occupations of Lapps and Finns in the Outer Fringe Zone are described well in Ohlson, B., Settlement and Economic Life in Enontekiö - A Parish in the Extreme North of Finland, Fennia, v. 84, 1960, part II, pp. 21-46.
25. Sällskapet för Finlands Geografi (The Geographical Society of Finland), Atlas öfver Finland, 1910, Helsingfors, Finland, 1911, plates 26 and 52-55; Granö, J. G., op. cit., and The Geographical Society of Finland, Suomi,....., op. cit., pp. 340-380.
26. Stone, K. H., The Development of a Focus for the Geography of Settlement, Economic Geography, v. 41, 1965, pp. 346-355, ref: on p. 353.
27. The Geographical Society of Finland, Suomen Kartasto, 1925, Helsinki, 1925-1928, plates 19-21 and Granö, J. G., Die Geographischen Gebiete Finnlands, Fennia, v. 52, 1931; and The Geographical Society of Finland, Suomi....., op. cit., pp. 408-438.
28. Several prior citations support this statement and four additional excellent references comprise the Symposium of the Research into Level of Development in Terra, v. 77, 1965, pp. 2-20.
29. The Geographical Society of Finland, Suomen Kartasto, 1925, op. cit., plate 19 (map 4).
30. The Geographical Society of Finland, Suomen Kartasto, 1960, op. cit., plate 38 (map 5).
31. Ibid., (map 8).
32. Symposium....., op. cit., p. 13.
33. Stone, K. H., Fringe Zones of Settlement in Norden, in 20th International Geographical Congress, Abstracts of Papers, London, England, 1964, p. 315.

34. I can not give much credence to the fact that families are large in northern Finland because a 5% reduction in farm price is allowed for each child.

35. The effects of a new national policy may be on the way all ready. Finland announced in October 1965 that a shift in emphasis was being made from forest products industries for exports to machinery and design goods because these "new exports" were then representing a tenth of Finnish total world sales.

36. Stone, K. H., Alaskan Group Settlement: The Matanuska Valley Colony, U. S. Department of the Interior, Washington, 1950.

37. In the late 1950's an average exchange rate was about 320 FMK per USA dollar or about \$3125 USA per 1 million Finnish marks. However, this exchange rate does not permit direct comparisons of cost because of differences in prices in the two countries. For this reason equivalents in USA dollars are omitted in the text so that only relative costs of settling activities in Finland will be noted.

Chapter 6

Swedish Zones and Procedures¹

Sweden's rural abandoning provides sharp contrast to Finland's rural settling. This difference reflects variation in the stage of development in the two countries as well as differences in involvement in recent international affairs. While agriculture dominated occupations until recently in Finland and she was entangled intricately in both World Wars nearly the reverse was true in Sweden.

Also, the geography of population in Sweden during the 19th and 20th centuries was both average and somewhat unique for Norden. It was marked by three major trends. One was great emigration, especially from southern provinces, to North America. Another was an internal northward movement of increasing rural population. The third was a rural-urban migration accompanying the rapid Swedish industrialization. But it was this last movement which provoked the uncommon recent local retreat of rural population. That, coupled with Sweden's overextension by several attempts to advance agriculture, forestry, and mining northwards and inland during the earlier decades in the 20th century provides useful experience when planning for the future of Norway. One might say it suggests what not to do as well as what might be done.

Employment of the measures of isolation in Sweden reveals a great fringe of settlement region. It is the northern two-thirds of the country, an area about 650 miles (1046 km.) north-south by 150 to 250 miles (241-402 km.) wide. It is divisible into the same four zones present in Finland and Norway; the zonal boundaries roughly parallel the eastern Swedish coast and

the southern border of the region (Fig. 6-1).

As the classification demonstrates, the difficulties of new rural settling increase with greater distance from the coast inland. The region as a whole also is distinguished by the fact that since the times of first modern settling there, 350-150 years ago, it has differed from the southern third of Sweden by its discontinuity of settlement and its poorer regional and local accessibility.²

Continuous Settlement Region

In that southern part of the country there is an apparent endless succession of permanently occupied homes (Fig. 6-2). Most of the land is in agricultural uses as far as can be seen in all directions.³ People-to-people relationships are close, all persons being within three miles (five km.) of neighbors in several directions. The settlement is held together by a dense network of transport lines oriented in many directions. Telephone service is universal. Privately owned parcels of land adjoin each other in totals of large acreage; company-owned land and that in public ownership are a distinct minority. Urban centers of all sizes are included. The settlement has a high degree of permanence. In short, there is no regional isolation and, at most, little local isolation. All persons are able to get or give aid quickly and from or in any direction. Thus, most new settlement would be relatively easy.

The northern regional edge of the CS Region is a zone shaped like a W. Its base is at about 60°N. and the western half has a greater north-south range than the eastern (Fig. 6-1). At the Norwegian border the zone begins at about 61°N. and goes south-southeastward to the middle of Värmland



Fig. 6-1



Fig. 6-2

Province, curves eastward through the city of Filipstad and thence north-eastward. At Falun the zone circles the northern side of the city, continues southeastward across the Dal River, and thence northeastward to the Baltic coast south of the port of Gävle. Throughout most of its extent the zone is sharply defined; it does not correspond with any known physical boundary in the area.

The region is relatively densely populated. Rural densities are mostly about 15 to 40 persons per square mile; they are greatest for all Sweden, more than about 75 per square mile, on the southern and western coasts, south of Lake Vänern, and east of the northern part of Lake Vättern.⁴ In 1960 the urban populations included were the 1,170,000 inhabitants of Greater Stockholm in the northeast section, Göteborg on the west coast with about 408,000, and Malmö at the southern tip with 233,000 people. Also, there were numerous other rather evenly spaced agglomerations from the tätorter, agglomerations of as few as 200 persons, to cities of 100,000.

Both the urban and rural people are quite accessible. They are closest to the market and supply centers of northwest continental Europe. The region is laced with inter-regional rail lines. In between are closely-spaced local lines, usually oriented east-west. In general, inter-regional and local railroads are so dense that every inhabited place in the region is within 15 miles (24 km.) of lines oriented in two to four directions and many people are much closer.

Bulk transport by ship supplements that by rail. Ocean-going freighters sail to major ports within 100 miles (160 km.) of any part of the region and local vessels to within 55 miles (88 km.).⁵ Ports for international traffic on the Baltic Sea, such as, Stockholm and Oxelösund, are ice-free at

least nine months each year and those on the west coast, such as, Göteborg, Hälsingborg, and Malmö, are open all year. Along both coasts at intervals of no more than 30 miles are ports with facilities for at least local traffic. Throughout the region, then, settlers have facilities nearby for multiple-direction shipment at any time of bulky or heavy materials; this is of major importance to any new rural settling.

Also, there are many roads. North-south highways with paved surfaces and direct routes, the inter-regional type, average about 55 miles (88 km.) apart and have a maximum separation of 85 miles (137 km.). Completing the high-density road net are east-west or indirect north-south routes, usually with gravel surfaces, for local traffic. The result is that most residences are within four to five miles (6-8 km.) of local roads going in three or four directions and within 15 to 30 miles (24-48 km.) of inter-regional roads running in two or three directions. Most residences, therefore, have bulk transport accessibility by road nearby and some of it is the all-weather type. This is significant for Sweden which has Europe's highest ratio of automobiles to people (117 passenger cars per 1000 persons in 1957) as well as a close network of daily bus routes.

In general, then, the CS Region has a very low degree, if any, of regional isolation and no local isolation. New settlers in the region are likely to find experienced neighbors (for advice) nearby as well as multiple opportunities in direction and type for the movement of bulky equipment, materials, and products. This means that additional rural settling in the region generally could be developed to a high degree of permanence in a short time.⁶

Inner Fringe Zone

The narrowness of the CS/DS boundary makes it generally easy to see on maps and in the field. Usually there is a sudden increase in the distance between farmsteads, a decrease in the ratio of cleared to forested land, and an increase in the amount of company-owned land. However, at the central deep reentrant, southeast of Mora, the definition is more arbitrary (Fig. 6-1). There the line cuts off an extension of continuous settlement northward to the Lake Siljan basin which is mapped as discontinuous because of the presence of the lake and the thinness of the inhabited area in its southeastern part.

This regional boundary also corresponds generally with two characteristics of population. The more significant is in recent changes of population. The first correspondence is the CS/DS line and the northern edge of the main concentration of 1931-1955 strong decrease in commune population, as classified by Godlund.⁷ However, on northward are many communes classed as having rather strong decrease or stagnation of population between 1931 and 1955; they dominate to a NW/SE line from Tärna to Umeå and just inland from the coast on northward to the Finnish boundary. A second and less significant correspondence is between the inland part of the CS/DS line and various low rural population density changes.⁸

The Inner Fringe Zone, adjoining the CS/DS border, is a single area elongated and with a bulbous southern end (Fig. 6-1). Along the Bothnian coast the zone is about 550 miles (880 km.) long NE/SW but it varies in width from 110 to 150 miles (160-241 km.) in the south to 30 to 50 miles (48-80 km.) in the north.

Population is densest near the coast. There the predominant pattern of

the inhabited area is clusters of groups excepting the district north of the city of Umeå where there is a more continuously occupied area about 100 by 50 miles (160 by 80 km.) in size (Fig. 6-2). Also, lining the Gulf is a series of cities with populations of 15,000 to 50,000 and spaced no more than 70 miles (112 km.) apart. In the bulbous southern part and inland, however, the inhabited area pattern has a crude linearity and includes a few larger cities, like Östersund with 28,500 people, but more smaller places like Mora and Särna with 5200 and 1500 inhabitants, respectively. The zone's larger cities are getting bigger from local and regional rural-urban migration⁹ but some of the smaller places are decreasing.

The continuity of Inner Fringe settlement shows best from the air. Rectangular, small, light-toned inhabited areas appear to be separated throughout the zone by irregular, coarse-textured, dark-toned uninhabited areas. The latter vary in size and distribution from three by five miles (5 by 8 km.) and closely spaced to more than five by 20 miles (8 by 32 km.) and closely to widely spaced; they are usually either the higher parts of the hills or the more poorly drained sections, both found throughout the zone. The zone's uninhabited area is about 10 to 35 per cent of its total size, with the maximum being in the southwest. There uninhabited uplands are 15 to 25 miles (24-40 km.) wide and 50 miles (80 km.) NW/SE, creating an isolation of population that would classify the area as middle fringe if it were not for its roads.

The public transport available make both the regional and local isolation low in the zone. Most of the people are within 10 to 15 miles (16-24 km.) of a railroad providing all-year transport in at least two directions (Fig. 6-3).¹⁰ In the north two lines have daily inter-regional service to

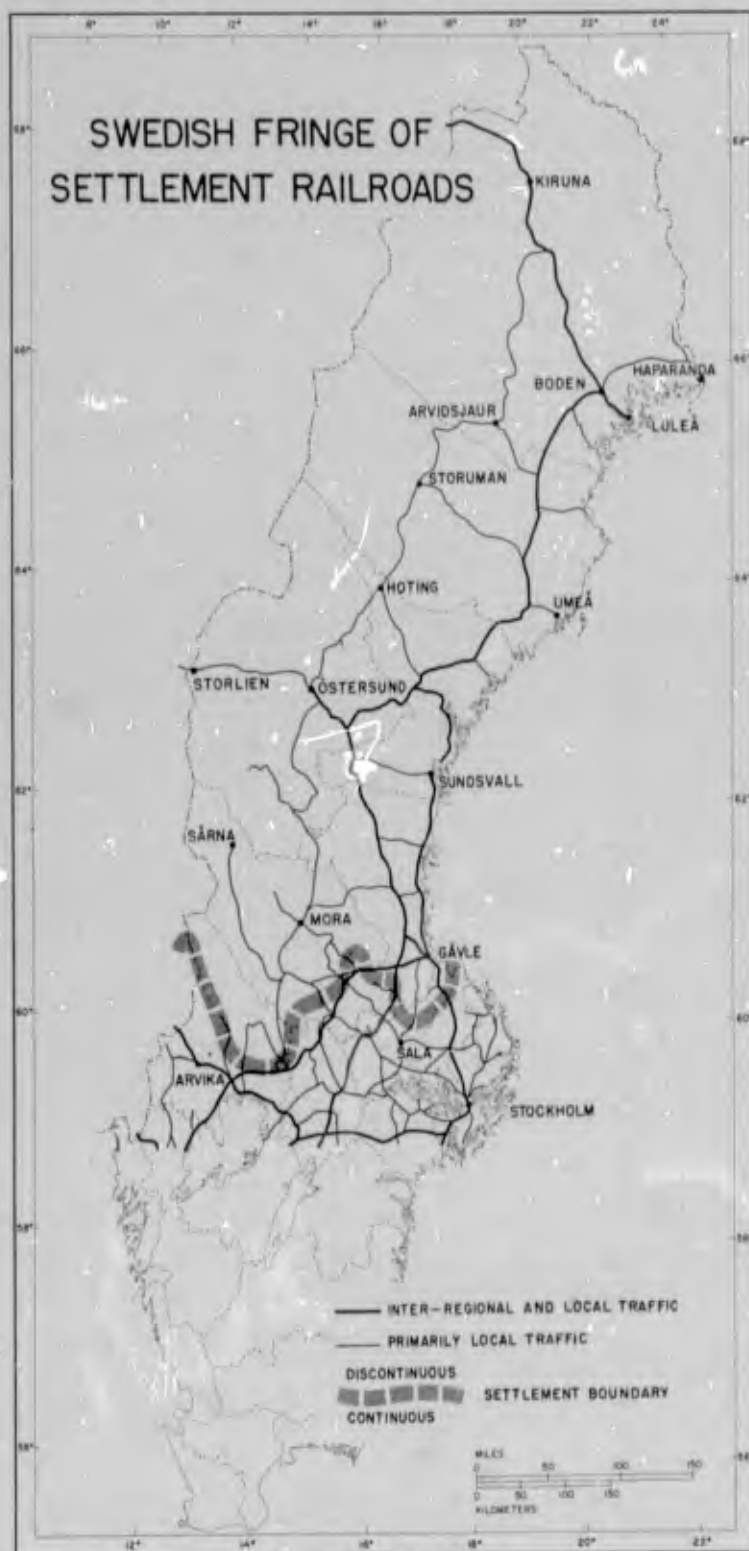


Fig. 6-3

Stockholm: from Östersund 350 miles (563 km.) in 10 hours and from Boden 620 miles (998 km.) in 16 to 19 hours. Additional local lines run east-west and/or are served by diesel rail buses; these provide either short and regular connections with the inter-regional railroads or, in the southwest, make possible nearly daily travel to the CS Region in five to seven hours.

The dense road net of the inner fringe adds considerable accessibility (Fig. 6-4).¹¹ State Highway 13 (also E-4) is available for inter-regional and local traffic for the length of the inner fringe's coastal section. The surface is mostly asphalt and concrete and the route is being improved steadily. Additional inter-regional roads, especially in the south, connect inland population centers with nearby cities in the CS region. Also, most people in the inner fringe are within five miles (8 km.) of local roads which go in three or four different directions and have gravel surfaces. Although traffic is disrupted or discontinued for trucks by frost activity or damage on a few of the zone's routes during the spring thawing period,¹² most of these roads may be used all-year. Further, the regular routes of inter-regional and local busses are so close that most people are within ten miles (16 km.) of scheduled service five to seven days a week all year.¹³ Even the rare places that are farther away are on roads and by private car it is only a five-to six-hour drive from isolated southern parts of the inner fringe to the CS region. And finally, plans are all ready being implemented to improve and expand the road system¹⁴ in conjunction with the proposal to establish one or two regional hospitals in the inner fringe to serve all of northern Sweden.¹⁵

Ship and air service supplement the other transport. To the north at Luleå, inter-regional and local transport is available by vessels for six



Fig. 6-4

months of the year and by daily passenger planes all year. Southward along the coast the shipping season is longer, nearly nine months at Gävle, and local plane service is available daily from the major ports as far south as Sundsvall and from Östersund.

Further, the zone's settlers may communicate with each other easily. Practically every residence has a telephone so aid may be summoned directly from local or extra-regional points at any time. Too, nearly every place has electricity and a radio. Mail service in the zone is mostly by rural free delivery periodically each week.

In general, then, new group or individual settlement may be introduced in much of the IFZ with many possibilities of permanence. Experienced settlers and transport routes are all ready available so that advice, supplies and physical aid may be obtained quickly and, what is deemed important, from several directions. As usual, however, the best land for agriculture and forestry is all ready occupied. Even so, second best land in the inner fringe zone is likely to be better than the best in another zone.

Middle Fringe Zone

North of and inland from the inner fringe is the middle fringe of settlement zone. It forms a single band across the DS Region from about the mid-Swedish-Norwegian border 500 miles (805 km.) northeastward to the Swedish-Finnish boundary (Fig. 6-1). The width varies from about 135 and 115 miles (217 and 185 km.) in the extreme northeast and southwest, respectively, to 40 to 90 miles (64-145 km.) in the middle part of the zone; further, it is nearly pinched in two northeast of Östersund where the most rapid zonal changes take place in the whole region.

The principal pattern of the zone's inhabited areas is groups of clusters including some long and short lines. There are occasional spots (Fig. 6-2). Where there are clusters settlers have neighbors in several directions but where there is linearity a settler has neighbors in only two directions. Within the zone this population isolation is greatest in the northeast and southwest sections. However, in the middle, there is not only less isolation but the zone's bigger cities of Lycksele and Noting with 4900 and 1000 persons, respectively. Elsewhere there are many local agglomerations of a few hundred people or less for local administration or services.

Settlement is quite discontinuous throughout. Roughly a third to two-thirds of the zone's area is uninhabited. Still the uninhabited cells are rather small and most often are hill tops or swamps. Near Lycksele, for example, they are five to 20 miles (8-32 km.) long, one to five miles (2-8 km.) wide, and three to fifteen miles (5-24 km.) apart. Some are quite narrow, long, and irregular. A few extend all the way across the zone. The area south of Storlien, though, is an exception; a few permanent residences and an occasional summer farm, the fabod, are widely scattered in an area more than 50 miles (80 km.) on each side. This would be outer fringe if not for its local accessibility by land transport.

Abandonment has contributed to discontinuity of settlement. Probably the middle fringe has, in number of abandoned farms, as many as or more than any other zone.¹⁶ Still, the effects have been varied. Where the pattern of inhabited areas was groups of clusters, as in the vicinity of Lycksele, abandonment of farms made possible an increase in the size of those still occupied. But in districts with linear patterns the abandoning of individual farms or of hamlets had various results from local improvement in ownership

patterns to increases in local isolation.

Regional isolation in the MFZ is moderate to low and its local isolation is low to moderate. Vehicular traffic to and from the CS Region and between settlers within the zone generally is possible but it takes more time, distances are greater, and there are more difficulties than in the inner fringe. For example, inter-regional railroad traffic is limited to one route in the extreme north which connects with the inner fringe inter-regional railroad at Boden (Fig. 6-3). Elsewhere are several local railroads. In the northern three-quarters of the zone they connect the inner fringe's coastal line with the middle fringe's paralleling "Inland Railroad". Traffic on the latter is principally local, either via trains for freight or by rail busses for passengers and light freight. Similarly, the railroad through Storlien is principally for local movement between Trondheim, Norway and Östersund and the line on south is for rail bus traffic to the middle of the southwest quarter of the zone. Throughout the whole zone, however, there are inhabited areas which are from 20 to 40 miles (32-64 km.) from a local railroad. Although the effective economic distances from various types of transport are little known, if at all, new settlers more than 20 miles (32 km.) from a railroad probably would consider it of little value to them.

Some of the isolation is relieved by roads (Fig. 6-4). However, only two short sections may barely be classified as inter-regional routes; they lead to Östersund from Storlien and Hoting. The remaining roads are used primarily for local traffic; they are two cars wide, have graveled surfaces, and are classed locally as good. The densest network is centered on Lycksele. There, too, is the zone's best combination bus-truck service for both

passengers and freight; runs are scheduled five to seven days a week all year over routes which pass within 15 miles (24 km.) of nearly all inhabited places. The remaining roads are narrow and winding provincial and private routes of various qualities. However, all of the zone's roads are so close that most inhabitants are within ten miles (16 km.) of routes running in three or four directions. Even though some traffic is discontinued during the spring thaw most of the roads are open all year. So most of the zone's people can get to a large city in the adjacent inner fringe within three to four hours by private car or four to six hours by bus and/or train.¹⁷ But the Region of Continuous Settlement is at least 15 to 24 hours of travel time away and by indirect routes.

Transport by railroad and road is supplemented by the summertime floating of logs in streams. Nearly all of the zone is crossed by closely spaced rivers flowing southeastward. These are used by floating cooperatives for the movement of several tens to a few hundreds of cubic meters of timber per stream per season.¹⁸ Most of the floating begins in the MFZ and increases downstream to end at wood products plants at the streams' mouths in the inner fringe. Floating is significant to potential settlers because by it they might obtain income from timber cut very early in the settling process;¹⁹ currently the trucking of timber is increasing annually thereby increasing the significance of local roads, and the timing of their construction, to new settlers.

There is no supplementation of transport in this zone nor any other on inland by scheduled all-year air service, excepting a one-flight-daily line to Kiruna. However, local charter flights may be had and occasional emergency aid is provided by military agencies.

Communication in the zone is easy. Almost every house has a telephone for local and long distance calls as well as electricity and a radio. Mail service varies; in some parts there is rural free delivery periodically every week to any residence and in other parts inhabitants get their mail at postal stations in nearby small agglomerations (tätorter).

It is clear that any new settling of groups of people in the middle fringe should be introduced carefully if it is to attain permanence. Certainly the process must be selective, the action cautious and well timed. Even more is required for new settling by individuals. In some parts of the zone there probably is, notably in winter, too much regional and local isolation and too little detailed knowledge of site characteristics to prevent the waste of people, time, and money. Proof is all ready available in the abandoned sites of villages and individual farms scattered throughout the zone,²⁰ and in the struggles of agencies like Lantbruksnämnden (The County Agricultural Board) to consolidate and improve farms. But in selected parts of the middle fringe there are possibilities of a new settlement becoming permanent, especially where the relationships between local, regional, and national economies are well understood. Such localities can not be outlined on the bases of single elements of the landscape, such as, soils or drainage; the delineation involves the complex relationships of inter-regional and local isolation, national desires and commitments, local demographic and occupational characteristics, physical site qualities, legal and financial bases for action--all these and other topics considered at any given time in the light of international, national, and local developments.

Outer Fringe Zone

Farther inland and northward is the outer fringe of settlement zone. It is a single area but very irregularly shaped (Fig. 6-1). The principle axis extends from near Storlien northeastward about 450 miles (724 km.) and is 30 to 50 miles (48-80 km.) wide. From this strip five fingers, between 20 and 60 miles (32-96 km.) wide, go northwestward to the Norwegian border.

In it population is sparse and the isolation of individual inhabitants is considerably greater than in the inner and middle fringes. The predominant pattern of inhabited areas is clusters of spots with occasional short lines, usually oriented NW/SE. Most residences are near streams and lakes in low mountains but sites are often on mid-slopes away from cold air drainage channels and in positions more exposed to sunlight.

Also, the zone's agglomerations are small. Cities and towns usually include 200-400 people with a maximum of 1400. The exception is the highly specialized mining center of Kiruna, with 25,700 people, in the zone's far north (Fig. 6-1) and south of it the cluster of towns near Gällivara.

The discontinuity of settlement is very great. Unsettled areas are 10 to 20 miles (16-32 km.) across and tens of miles long (Fig. 6-2); they are usually uplands between the water features draining southeastward. In fact, more than 65 per cent of the area is uninhabited and even where there are people single residences are common. Further, this is also an area of abandonment.²¹ Although the number of abandoned farms in the middle fringe is greater the problem in the outer fringe is more serious. This is because there is already considerable local isolation and abandonment increases it so that more people may desire to leave and, what is worse, at an accelerating rate. One cause of abandonment in the zone, the construction of hydroelectric

power plants, provides the attraction of work but some of this is for specialized personnel; further, once built the plants require relatively few workers. Thus, the "holding force" of power plant construction is only temporary for the people flooded out by dammed rivers or raised lakes. And, all settlers face the possibility of increased isolation by more abandonment.

The zone's regional isolation is high and its local isolation moderate. Generally an outer fringe has no railroads but in north Sweden there is an inter-regional and local route running northward through Kiruna to Narvik, Norway (Fig. 6-3). It is used somewhat for inter-regional passenger traffic from southern Norway and Sweden to Norway's major northern port but the principal use is for the daily shipment of iron ore from Kiruna northward to Narvik for storage and then export via ship. Iron ore is also shipped on the line from Gällivara southward to the great steel manufacturing plant and exporting port at Luleå.

Transport by road also is limited and there is no inter-regional route. Commonly roads are single routes, 20 to 40 miles (32-64 km.) apart, jutting northwestward along valleys from a network in the middle fringe, excepting southeast of Kiruna where there is somewhat greater density (Fig. 6-4). The surfaces are often poorly graveled and the routes one-way and winding. Most end where relief is great or elevations are too high but three do extend westward from Tärna, Gåddede, and north of Storlien to connect with Norwegian roads. Fortunately busses serve the zone's main roads five to seven days a week all year and in summer there is scheduled boat traffic on some of the larger lakes. Too, there are evenly spaced telephone stations along the principal valleys. On the other hand, additional isolation develops seasonally because of drifting snow, fog, and freezing and thawing, especially for those

settlers who have only personal boats and/or trails by which to reach their homes. In general, then, most of the outer fringe is more than a day's travel by indirect and sometimes difficult routes from the CS Region.

Because of the isolation of the outer fringe and its parts, it is generally unwise for new settling to be tried now. Attempts, if any, should be experimental and limited to selected individuals. Exceptions may be feasible at points of highly specialized resource development, such as, mines and power sites. In general, either the chance of permanence of new settling is slight or it would be excessively expensive where the regional isolation is high and where emergency requests for help might go unanswered for at least several hours.

Outermost Fringe Zone

Along the northern part of the Swedish-Norwegian border are the four areas of Sweden's outermost fringe zone (Fig. 6-1). They vary in size from 20 by 25 miles (32 by 40 km.) northeast of Storlien to 250 by 40 to 60 miles (402 by 64-96 km.) between Tärna and Kiruna. Usually this zone adjoins an unpopulated region but in Sweden and Norway none has been mapped. This is because the largest unpopulated area, the Tärna-Kiruna part and its extension in Norway, is considered to be too small and too narrow to be classed as a region; it is only 20 to 80 miles (32-129 km.) wide and about 100 miles (161 km.) long. So the four parts of the Swedish outermost fringe zone extend westward into Norway where isolation decreases, rather than increases, as the Norwegian Sea is approached.

This outermost fringe is the extreme edge of the inhabited world in Norden, excepting inner Iceland. Population has the maximum isolation, both

regionally and locally. Some 85-90 per cent of the zone is uninhabited. Only a few people are present, and many are Lapps, a few of whom still live in semi-nomadism. Widely spaced single residences or poorly defined clusters of two or three dwellings are common whereas agglomerations of as many as 50 to 100 are unusual.

Each of the inhabited places is on or close to water, either a stream or a lake. In surface configuration the zone is principally the higher and rougher parts of Kjölen Mountains. Thus, the pattern of inhabited areas is widely spaced spots; occasionally a few are crudely aligned (Fig. 6-2).

Regional and local isolation are both high. There are no all-year transport facilities and the only seasonal type is summer-time boat service on two of the long lakes. In general, settlers move by personal boat, by foot, or with animals. Such movement is often difficult, especially in winter. Thus, travel time both intra- and inter-zonally is long and unpredictable at many times of the year; just to an adjacent zone might take a day or more. Further, some settlers do not have a telephone; however, the government has extended the lines deeply into the southeastern parts of the zone for protection against fire and accidents to persons recreating there as well as for possible military uses.²²

It is clear that this OMFZ is the zone of maximum difficulty for new settling. There are too few people present, there is too little experience of settling in the area, and clearly it would be very costly. In fact, the problem at the present time is not the consideration of new settling there. Rather it is to determine whether or not the present settlers even should be encouraged to stay, for any reason.

The Two Swedish DS sample Strips: General

Two sample strips were selected for detailed study of northern Swedish abandoning and settling, especially the former. These are named for the provinces they principally represent.

Through the middle of the Swedish DS Region runs the Väster-norrland (Province) Strip. It is a sample, oriented NW/SE, which is about 180 miles (290 km.) long and 30 miles (48 km.) wide. From the coast inland the towns included and shown on Fig. 6-1 are Bjästa, Hoting, and Gädde. Nine minor civil divisions (socken) make up the strip three of which, on the inland end, are in adjoining provinces and at the eastern Norwegian boundary.

The other sample parallels the first one about 65 miles (105 km.) northeastward. This is the Västerbotten (Province) Strip. It also extends southeastward from the Norwegian border, for about 215 miles (346 km.) and has an average width of 25 miles (40 km.). Small centers included are Robertsfors (near the coast), Malåträsk (in the middle of the strip), Sorsele (on the inland railroad), and Ammarnäs (near the NW end). The minor civil divisions are six in number and, like in the first sample, are smallest at the coast and generally increase in area to the largest at the Norwegian border.

Each of the strips cuts across all four fringe of settlement zones at right angles to their major axes. The Väster-norrland Strip has a narrow section of interrupted inhabited area, a wide part of groups of clusters and lines of dwellings, and a small piece with spotty patterns of residences (Fig. 6-2). It encompasses some of the coastal inter-regional rail line, the inland railroad, and part

of a connector between the two (Fig. 6-3, from Hoting southward) and its roads extend the length of the area and include a coastal and inland inter-regional highway (Fig. 6-4).

The Västerbotten Strip is similar but provides some variety. At the coast it has a much wider section of interrupted area of houses, predominantly linear patterns in the middle, and no residences at the northwestern end (Fig. 6-2). In railroads it includes only the coastal inter-regional line, the inland local route, and part of a short coastal "feeder" (Fig. 6-3) while for roads there is a dense network of local routes at the coast, tied to the inter-regional E-4 (Riksväg 13), which opens rapidly in the middle of the strip and then comes to a dead end with a single local line in the middle of the northwestern third. Thus, all major patterns of the fringe zones are included in the two sample strips, with the exception of a major coastal city; but each has such an urban area about 15 miles on either side of it.

General: Population Change

The strips also are representative areas of northern Swedish population changes. The initial settling took place along the coast in the late 16th and early 17th centuries. Movement inland was very slowly northwestward along the rivers and by 1750 only a few people were thinly scattered to the lower parts of the Kjölen Mountains.²³

Thereafter the government was more favorable and population all over Norrland continued to increase until the beginning of the 20th century.²⁴ By that time the decline in numbers of rural people, all ready well started in southern and middle Sweden, was starting in

the north. Since 1915 the growth in total population of the northern provinces has been in small percentages.

Many parishes to the latitude of Östersund (Fig. 6-1) reached their maxima of population between 1880 and 1920.²⁵ Most of the rest of Norrland had its greatest numbers of people in 1930 and 1940 and a few parishes as recently as 1960. In this respect the Västerbotten Strip is typical but the Västernorrland Strip is not. Most of its population peaks came in 1950 and since 1955 it has been in the area of Norrland's biggest population losses. During field work through 1964 the trends were observed to be continuing. Thus, the major tendencies have been losses in rural population for the recent 15-35 years and increases of numbers in the larger coastal cities and inland centers. Meanwhile, however, some rural settling took place²⁶ as a result of the nation's economic, political, and military desires.

General: Support of Settling

This new settling was supported by a number of programs. Few, however, were for planned colonizing and it appears there is relatively little in this respect to be learned from them for use in Norway. Still, any results provide some guides and in total the actions prove that there will be settling almost anywhere if a nation wants it.

Two early actions by the Swedish government were designed to restrict settling in Norrland. The first was the establishment in 1751 of Lappmarksgränsen (the Lapp Region Boundary) to create a national reserve of land to the north and west of it, now the inland

three-quarters of the two northernmost provinces. It is interesting to note the rather strong correspondance of this line and the IFZ/IFZ boundary for about 180 miles (290 km.). The second restriction was Odlingsgränsen (the Cultivation Boundary). This was demarcated in 1867 because the agriculturalists and Lapps were clashing over the use of inner northern Norrland; northwestward of the boundary new agricultural settling was allowed thereafter to only a limited extent in order to favor the movement of the Lapps' reindeer. Here, too, is an item of interest as there is very strong correspondance of this line and the IFZ/OFZ limits for about 230 miles (370 km.). These two examples illustrate the need for careful consideration of the effects laws may have over a long time on the characteristics of fringe settlement.

Direct support of settling since World War I has been by at least four programs. Many were to discourage emigration to the U.S.A. First, and the only one involving planned colonizing, established the kolonat (colony). This was begun during World War I (though it was not named until 1925). Every colony was formed by a group of settlers moving in at about the same time and each had a small farm. One may theorize that initiation of the program was also to produce food in a country somewhat continentally isolated in war time by its policy of neutrality.

In 1916 the fjällägenheter (mountain place) procedure was started. In some areas it was called the Kronotorp 50 (state crofter 50). This was not a colonization plan but, rather, was a subsidy to settlers who had all ready gone on to land west of the odlingsgränsen. Approximately 80% of a settler's costs were absorbed by the state

and each contract was for 50 years. A second part of the program was formed about 1948 with the establishment of the Norrlandsk fjäll-
ägenheter (Norrland mountain place) which was also called Kronoterp 43 under it the settler got 100% support but was expected to pay 300-500 Swedish Kronor (57-96 USA) a year at the discretion of the administering agency. Encouragement was really given by the fjällägenheter program to individual settling in places with high degrees of local and regional isolation. Reasons for sponsoring this have been given as: protection against forest fires, provision of emergency aid for outsiders in the area (e.g., hikers, skiers), sustaining people for work in forested parts, and as an aid to Swedish military intelligence (the settlers under this program did prove most useful in several ways during World War II); it is interesting that during all the interviewing about this program not once was it stated that the program was for the settling of the people involved. A few hundred of these small isolated farms are still present²⁷ and though new ones are no longer contracted for there is usually a number of applications for any one that becomes available. In general there is no problem of abandonment of these places even though they are in the OFZ and the ONFZ. However, there is no question that they are expensive. In fact, no cost estimates of the program are known to have been compiled or published and many administrators were pleased that the name of the program disappeared in July 1962 when control of the remainder of the program was transferred to a different government agency (Domanverket). However, a final balance sheet on such colonization depends on the valuation a government wishes to place on both the long-run and short-run non-agricultural activities of the settlers.

Fringe settling is likely to be characterized for some time as multi-occupational.

The fourth program was called the Kronotorp (a small-farm settlement on state-owned land). The date of its origin is debated. This was a national form of support designed to encourage one or more new agriculturalists to settle on nationally-owned forest land, in part to form a labor force to work in the woods there. Several examples of this type are in the Västernorrland Strip and one is described in detail (Norrbygd).

General: Subsidies and Loans

A number of subsidies and loans have been available to encourage farming in Sweden.²⁸ They were designed to help raise the national standard of living, to stimulate farmers to produce more economically, and to balance total national production. To be eligible for most of the aid a farmer must have a net worth of less than 80,000 SK (\$15,500 USA), his family's taxable income must be less than 6000 SK (\$1155 USA) a year (with modifications due to the number of dependents), and his farm should be manageable by two families. The help is made as a direct subsidy or it is made as a loan; if the latter it is interest-free and installment-free and usually is to be written off over a 10 year period according to a plan. The system of loaning is employed when maintenance requirements are costly or when the government wishes to be sure a farmer does not make an excessive profit (by way of the subsidy) when selling his farm.²⁹ Grants can normally be had to cover 25% of the estimated cost of investment.

Loans to buy farms are administered by private banks but guar-

anteed by the government, an uncommon but successful system. The total purchase price may be obtained and at the lowest interest of the lending bank. Loans for the purchase of livestock and machinery are limited to less than 20,000 SK (\$3,800 USA). For the construction of a dwelling a farmer (or an urban dweller) may borrow up to 90% of the estimated cost, first obtaining aid from a private bank and the rest from the government; interest on such is subsidized so that the charge on the bank's funds is 3.5% and on the rest is 4%.³⁰ Improvements on a residence are subsidized to 2,400 SK (\$460 USA) and in special cases can be for as much as 10,000 SK (1,900 USA). In addition, a Swedish citizen eligible for the above aid and having two children less than 16 years old may get a rental allowance of 150 SK (28.75 USA) a year per child and a fuel allowance of 200 SK (\$38.50 USA) a year.

Acreage subsidies, the most recent type to be put in force (started 1960), were designed to aid the small farmer. Formerly funding was based on milk production but with this program eligibility depends on a cultivated area of between 2 and 10 hectares (5-25 acres), property value, income, and certain provincial allowances; grants are 200-400 SK (\$38-77 USA) a year. However, the value of this subsidy in northern Sweden has declined since 1960. In that year the government intensified efforts to produce agricultural goods in the four northernmost provinces and agricultural effort was to be concentrated in certain districts; subsidies were set to be as much as 60% of total costs.³¹

Other loans and subsidies have been described as the progressive type. Some were designed to increase farm size and consolidate the

separated parcels of any one farm.³² Others were for improvements of the land by ditching or the building of roads. And some aimed at the improvement of techniques in raising crops and animals. The principal limits on these are related to their cost and the anticipated increased income as a result of having them.

In most recent times national policies have contributed to northern Swedish depopulation. Up to about 1955 small-farm colonists were encouraged. Then things changed. A big hydroelectric developmental program became apparent. There seemed to be acceptance of a principle that it is not feasible to maintain an acceptable standard of living by farming-forestry on small plots in much of northern Sweden. In 1963 the provincial agricultural commissions began carrying out directives from Stockholm to focus subsidies on farms which were provably economically sound. This tied in with the emphasis of developing farming in only certain districts. These actions made it harder for small farms to be subsidized and as forestry offered less supplementation of income (because it is becoming so specialized) the future for small farms in northern Sweden darkened. Thus, forecasts are for further depopulation of areas with poorer small farms, consolidation of small places into a few larger farms in the better farming districts, more specialization in forestry, and more localization of services in the bigger central places. Time, re-education of people who move, money, and the development of newer principles of settling are needed.

General: Decline and Abandoning

The two sample strips also are representative of the general trends of decline and abandoning in Norrland. Out-migration is strong

in each; in numbers of people any province may have an annual net loss through migration of as many as 3000. In the coastal sectors the decline and abandoning tends to be concentrated between the bigger cities, especially where local isolation is high for one or two farms; however, many of these have become summer places so the houses are not abandoned. Inland the pattern is different. Decline and abandoning is going on all over, not in just the most isolated places. There, too, it is in terms of one or two farms but groups of as many as seven to ten farms have been completely deserted. It appears that if a group numbers more than perhaps ten farms abandoning of a few leads to consolidation and strengthening of the others but only if local isolation is not too great and public facilities (such as, schools, hospitals, and churches) are present or nearby.

This abandoning is the result of at least four causes, operating in varying intensities and combinations. 1) The change in the governmental support programs, discussed above, which is forcing farming to a more profit-proving basis. 2) Younger people migrating from the farms, especially the more isolated ones, leaving the elderly with no one to carry on after their retirement or death. 3) Specialization of equipment and labor in the woods producing a reduction in the overall need for workers. 4) Improved farming techniques, associated with larger farms where machinery can be employed profitably, causing a reduction in the total requirement for farm labor.

The Västernorrland Strip

Since 1956 the total population of Västernorrland Strip has

been decreasing and in more recent years at an accelerating rate. The sample strip through the province reflects this, excepting the parishes at the ends.³⁴ At the coast there has been a steady increase since 1800, a direct product of the growth of villages like Bjästa. Immediately inland steady or small declines have been the order since 1900-1930. In the middle of the strip parish populations have been about the same or gently declining since 1930. But next to the Norwegian border the number of people was about the same after 1920 with a slight increase in the early 50s before decline set in.

These earlier trends have continued since World War II. In nearly all the parishes population has decreased (Fig. 6-5). Exceptions occurred, like Junsele and Tåsjö, when hydroelectric development took place. Inasmuch as most of the larger centers of population increased both before and after the war it is clear that the loss was of rural people from single places, clusters, and hamlets. In fact, total farm population by parishes in the strip has been decreasing since 1940 or 1950, the proportion of total parish population on farms declined 6-15% between 1930 and 1950, and the amount of farmed and improved farm land has been lessening since 1944 in most parishes. These data indicate some of the significance of decline and abandoning and how long it has been in effect.

In order to understand better some of the forces involved in this change, a special study was made of in- and out-migration in the Västernorrland Strip. The years 1948 and 1953 were selected as representative of recent conditions and numbers of persons by sex and by point of origin or destination were obtained for religious

Fig. 6-5, Västernorrland Strip, Population Changes, 1948-1958

		Absolute Change		Per Cent Change		Net Migration		
		48-58	53-58	48-58	53-58	Male ^a	Female ^b	Total ^c
Natra	(Y)	+102	+19	+1.7	+0.3	-2.9	-5.3	-4.4
Sidensjö	(Y)	-265	-152	-13.5	-7.8	-14.1	-17.4	-15.8
Skorped	(Y)	-213	-78	-12.2	-4.9	-20.3	-18.9	-19.8
Anundsjö	(Y)	-392	-312	-6.5	-5.2	-9.0	-11.1	-10.0
Solberg	(Y)	-106	-101	-5.9	-5.6	-11.9	-19.0	-15.0
Junsele	(Y)	+218	-367	+5.6	-8.6	+3.0	-2.0	+0.7
Fjällsjö	(Y)	-163	-108	-6.4	-4.3	-13.6	-13.6	-13.6
Bodum	(Y)	-68	-98	-4.6	-6.1	-8.9	-16.8	-12.9
Ström	(Z)	+20	-72	+0.2	-1.2	-4.9	-9.0	-6.8
Alanäs	(Z)	-150	-65	-8.8	-4.2	-9.8	-13.4	-11.3
Täsjö	(Y)	-55	+73	-1.3	+1.7	-10.1	-9.3	-9.9
Dorotea	(AC)	-45	-33	-2.9	-2.7	-11.7	-14.9	-13.2
Risbäck	(AC)	-31	-25	-1.8	-3.1	-20.6	-26.7	-22.8
Frostviken	(Z)	+12	-201	+0.8	-7.2	-9.0	-7.6	-8.5

Y - Västernorrland Province,

Z - Jämtland Province

AC - Västerbotten Province

Source: Official data collected from the records of the 14 parish churches.

a) Male net migration divided by total male population.

b) Female net migration divided by total female population.

c) Net migration as per cent of total population.

parishes.³⁵ Some general characteristics are clear. Females, for example, had the greater net migrational losses in nearly every parish for the ten years through 1958 (Fig. 6-5). During this time women dominated the movements in both directions in all but two parishes; the dominance was greater in the coastal areas (54-59% of the totals of in-migration and out-migration) than way inland (52-55%) but some of this may have been due to a higher proportion of males inland (54-55% of the total population near the border versus 51% in the coastal parishes). But regardless of sex, it is certain that the migrants were the younger people; women in the immediate pre- and post 20-years-of-age bracket who could find little work and were unlikely to inherit the parent's farm and men of the same age who either were opposed to great isolation, "outranked" by a senior brother in potential inheritance, or attracted to the steadiness (and lack of personal-fund investment behind) industrial wages in comparison with farm income.

The geographic qualities of the movements of population are even more important here. In-migration in the coastal part of the strip originated mostly within 30 miles (48 km.) of the shore. Between 1948 and 1958 the numbers of in-migrants from all directions decreased sharply. In the middle of the strip in-migrants were fewer than in the coastal part and varied little in distance and numbers involved in the two sample years. At the northwestern end, in Frostviken Parish, in-migrants dropped between 1948 and 1958 but clearly in both years came mostly from Jämtland, the province to which the parish belongs, rather than from Västernorrland.

Out-migration, a direct relative of decline and abandoning, dif-

ferred from in-migration. Primarily distances were shorter. Out-migrants usually moved only 10-20 miles (16-32 km.) and there was much intra-parish change of still shorter distances that went unrecorded in church records. Apparently the attraction was the nearest central place with more facilities than a migrant's point of origin. On the coast, for example, the city of Örnsköldsvik attracted people from the southeastern end of the strip in 1948 and had a far greater and overwhelming effect in 1958. In the middle of the strip (Junsele parish) people moving out in 1948 went mostly short distances to the south and west but ten years later this changed to mostly south and southeast. Farther inland adjacent to Norway the attraction in 1948 was southward towards Östersund and somewhat southeastward but in 1958 it was reversed and concentrated to the latter (probably for the hydroelectric project in Tåsjo).

In general, between 1948 and 1958 the principal attracting force causing decline and abandonment in the Västernorrland Strip was the local central place of perhaps 500 or more people. In-migration dominated with 12-18 miles (20-30 km.) of such places (e.g., Hötting in Tåsjö parish and Junsele in Junsele parish) and out-migration dominated the parishes without such (e.g., Risbäck, Bodum, Skorpéd). As to direction of migration there was a division; within about 60 miles (100 km.) of the coast the movement was south-eastward toward it, in the middle of the strip there was a mixture of migrations to local centers and some downriver towards the coast, while inland the pull was southwards toward the provincial admini-

strative center (Östersund) which was away from the Ängerman River valley. Actually, there was little direct exchange between the inland and coastal parishes.

It appears that abandoning has been most often local in its first stage. That is, the people left but went only short distances to a local center. At another time other persons moved from that place to a more important one. And at yet another period still other people migrated from the second place to a third. But this suggested progression, like dominos falling in a line, has not always been southeastward to the coast and then southwestward to Stockholm. Yet, the experiences to date suggest the possibility that the creation of specific agricultural districts, industrial nuclei, regional hospitals, and centers of learning at coastal points (as is now being done) may accelerate depopulation of the inland areas too rapidly.

It has been noted that additional depopulation is all ready anticipated. Extrapolation of trends in recent decades supports this. For all of Västernorrland Province the 1970 population is estimated at either 1100 more or 10,000 less than the 285,620 people there in 1960.³⁶ Meanwhile the number of youngsters under 15 is expected to drop 8,000-10,000 (12-15%), of persons between 15 and 25 years old to increase 350 or decrease 3,800, and of those over 65 to rise 9,650 (29%).³⁷ It is no surprise to learn that agricultural-forestry workers are calculated to decline in numbers by 20-30% (3800-5471 persons) by 1970. The social, financial, and political costs of such depopulation, and its certain attendant abandoning of rural places, may be great. However, the government wanted the people there --

the government got them -- now the government must pay the price -- but other nations can profit from the experience.

Abandoning was all ready big and old process in Västernorrland by 1957. In that year a preliminary listing for this study included 44 abandoned settlement units and 41 declining ones.³⁸ These were revised upward considerably in three years for that part of the sample strip in the province and several were added in a category called expected-to-be-abandoned; the latter are not listed here in order to prevent any hardship accruing from such.

By 1960 the Västernorrland Strip included 42 abandoned and 63 declining settlement units. This was a conservative figure.³⁹ The number has increased at a faster rate in recent decades and in accordance with the migrational trends and the changes in population noted previously an acceleration of abandoning may be expected. The distribution of the two types was throughout the strip (Fig. 6-6). In the coastal part, roughly the Inner Fringe Zone (Måtra-Skorped parishes), abandoning of whole units had been small and decline great; this was due to so many abandoned farms there having been taken over for seasonal recreational purposes and some as rural-nonfarm residences. However, the sensitivity of the Middle Fringe Zone (Anundsjö-Tåsjö parishes) showed again with the sharp increase in number of abandoned and declining places scattered all over the zone. The smaller numbers of units in the OFZ and the OMFZ was a reflection of fewer settlement units in total. In the first three zones the abandoning was not at only the most isolated farms but it did include many such locations.

Fig. 6-6, Västernorrland Strip, Abandoned and Declining Settlement Units, 1960^a

Parish ^b	Abandoned		Declining	
	No. of Farms/Unit	Total Units	No. of Farms/Unit ^c	Total Units
Nätra (Y) ^d		0	8,8,6,11,12,8,4, 5,6,5,6	11
Sidensjö (Y)	2,1	2	8,5,5,2,15,6	6
Skorped (Y)	1,2,2	3	3,5	2
Anundsjö (Y)	2,3,3,2,1,2,3,3, 1,5,1,4,1,1,2	15	3,2,5,2,6,2,5,4, 2,2,1	11
Junsele (Y)	7,1,2	3	5,8,6,3,7,6,6,5, 10,6,6	11
Fjällsjö (Y)		0	3,4,4	3
Bodum (Y)	4,5,1	3	3,5,3	3
Ström (Y)	3,2,5	3	25,10,15,20,3,3	6
Tasjö (Y)	3,4,6,7	4	4	1
Dorotea (AC)	4,1,1,1,1	5	10,8,3,5	4
Frostviken (Z)	1,1,1,2	4	3,4,3,3,3	5
Total		42		63

^aCompiled from interviews and study of records in Lantbruksnamnden offices in Härnosand, Ostersund, and Umeå, from interviews with 11 ombudsmanner (parish secretaries), from analysis of air photos, and from field observations.

^bIn this figure Anundsjö parish includes the Solberg parish in Fig. 6-5, Ström includes Alanäs, and Dorotea includes Risbäck.

^cThis is the number of farms per unit still occupied in 1960; in each settlement unit included there has been an abandonment of at least one farm (in some as many as five or more).

^dIn this column Y is Västernorrland Province, Z is Jämtland Province, and AC is Vasterbotten Province.

It is evident that smaller settlement units have been abandoned but that larger ones are in process. Most of the complete abandonment has been at places with three to five farms but decline was in process at clusters of 10-20 (Fig. 6-6). As present trends of abandoning continue it is likely that the most and the larger places will be in the Middle Fringe Zone and that part of the Outer Fringe Zone near the IFZ/OFZ boundary. And, total abandonment between 1960 and 1970 is likely to be of larger places than those left before 1960; this means the readjustments by both local officials and rural people are likely to become even greater in number and in psychological stress than previously.

Explanation of the distribution of the farms abandoned by 1960 requires several considerations. Some general ones are discussed briefly and specifics are summarized in the case studies from within the strip. One overall problem has been the small size of too many of the farms. A measure of this was provided by a Lantbruksämnen inventory of farms in Västernorrland settlement units of cluster-size and larger in 1955.⁴⁰ In the Inner Fringe Zone most of the places had some bärkraftiga jordbruk (sustaining, or full-time, farms) and for many the proportion of this type was 10 to more than 20 per cent; most notable was the fact that the larger villages had from 20-35% of their farms as the full-time type. But at the IFZ/OFZ separation the change was sharp. Within the Middle Fringe Zone were few places (less than 25%) with full-time type. But at the IFZ/OFZ separation the change was sharp. Within the Middle Fringe Zone were few places (less than 25%) with full-time farms and in the larger villages they comprised only about 5-15% of the total. Within the other two fringe zones, of course, the full-time farms were even

fewer in numbers. Yet, in all zones, except parts of the Inner Fringe, the distribution of these farms was in such small numbers and so scattered that the potential of consolidation to increase farm size did not appear very hopeful.

Ownership patterns may be either a cause or an effect of abandoning.⁴¹ In most of the Inner Fringe Zone in 1960 much of the land was privately owned and that under company (usually a woods products organization) control was in small blocks (perhaps 2 by 5 km.) five or more kilometers apart or in narrow strips (possibly 500 meters by 4-5 km.) 500 meters or more apart. But near the IFZ/MFZ line the company-owned land increased rapidly to blocks at least 5 by 10 km. and sometimes adjoining. There, too, state-owned parcels began in larger numbers and they were only slightly smaller than the company-owned pieces. In total area the two probably occupied more than 75% of the sample strip's MFZ but near the OFZ boundary this was probably nearer 90%. With increasing distance inland, and increasing elevation, there was less privately-owned land, less company-owned, and more belonging to the state. But back in the Inner and Middle Fringes it is probable that these ownership patterns were more an effect of decline and abandoning of farms rather than a cause. Although many of the woods companies desire more land most of them by 1964 preferred not to increase holdings by acquiring scattered small farms. Also, by that time the provincial agricultural commissions were buying abandoned farms (and putting them back into forests) because the only prospective buyers were speculators from middle Sweden.

Perhaps the quality of the land contributed also to the aban-

doning. Most of northern Sweden is hills and low mountains, pine- and spruce-covered in lower elevations, and either glacially eroded or covered with materials deposited by glaciers or in glacial seas during the last period of glaciation.⁴² Though the region is dominated by great southeastward-flowing streams, drainage locally is often poor. In fact, the distributional patterns of most of the physical elements of the landscape are quite complex; soil, drainage, vegetal, meteorological, and surface configurational characteristics are commonly heterogeneously mixed and in small patches, requiring considerable knowledge and care (and often at least some luck) to use successfully.

Equally debatable as a cause of abandoning is the quality of the settlers. Here the variables are numerous, of course, and are made more difficult to estimate by changing conditions since first settling, by accidents, by variations in governmental policy, and by social and psychological differences in people. These have not been measured and evaluated in northern Sweden (nor hardly anywhere else in the world) so only recognition of a possible relationship to the process of abandoning can be given.

Abandoning has paralleled a decline in the attractiveness of the Västernorrland Strip to its younger people. Only some have been lured by industry and big cities at the coast but nearly everyone has been affected somehow by the attraction of increased security and amenities and decreased isolation. Schools, hospitals, churches, and the sociological 'cement' of possible multiple contacts with other people, for various reasons, have just increased in

significance. In instances such as those noted above changes in governmental policy have reduced further the attractiveness of some areas. But perhaps these policies and the process of abandoning will be considered more favorably with the review of case studies in the strip selected to illustrate the variety of problems and responses.

Västernorrland Strip Case Studies

The case studies of declining or abandoned settlements in the strip are arranged in their geographical order going inland and from the IFZ to the OMFZ. The primary sources of data were interviews with provincial and parish officials, analyses of data in provincial agricultural commission offices (especially the 1955 inventory of byar), field observations, ground photography, and interviews with local farmers in or near the sites of study. Four other settlements in Västernorrland have been described by Porenius.⁴³

IFZ--Bäck: 9 km. E of Bjästa; 10 farms (1920)/2 farms (1959); three full-time farms (total of 29 ha. cultivated, 102 ha. of woods cultivable, and 158 ha. of woods not cultivable), seven part-time farms (total of 9 ha. cultivated, 17 ha. of woods cultivable, and 31 ha. of woods not cultivable); abandoning mostly between 1945 and 1960 especially in relation to small size of farms; most of the abandoned farm houses used in 1960 as summer residences.

IFZ--Rossjö: 11 km. W of Bjästa; 15 farms (1920)/8 farms (1958); no full-time farms, the 15 farms part-time (total of 57 ha. cultivated, 320 ha. of woods cultivable, and 118 ha. of woods not cultivable); site occupied at least 300 years; got telephone in 1915 and electricity in 1921 (though some farms without both in 1959); road

improved in 1928; many farmers felt the farms were too small and had to work in forests; in 1960 about 10 persons less than 15 years old; some abandoning due to older people dying or going to homes for aged, some farmers went to farms closer to a city, and some to industrial work; older people present in 1960 did not feel isolated after road was improved but knew children did.

IFZ/MFZ-- (S.) Långsele: 15 km. WNW of Bredbyn; 5 farms (1920) /0 farms (1959); no farms were full-time, the five farms were part-time (average 3 ha. of cultivated land and 40 ha. of cultivable woodland each); all land on steep and north-facing slopes; no electricity or telephone; poor road with weak and one-way bridge; abandoning of four places between 1955 and 1960 but one house used as summer residence; all of the farmers moved to Långsele cluster (27 farms of which 7 full-time in 1955) about 3 km. N.

IFZ--Högtjäl: 28 km. NNW of Bredbyn; 5 farms (1920)/4 farms (1959); no full-time farms, the four farms part-time (average of 3 ha. each of cultivated land and no other of any type); got electricity and telephone in 1948 but some farms without in 1959; some dwellings without running water and in poor condition in 1959; at end of road which was improved in 1952; mobile store came once a week in 1959; every family had a car; only one person less than 20 years old; some settlers in 1959 wished to be more centrally located; abandoned farm left because owner married and wife insisted he move to her more centrally located farm (at Sidensjö); cluster in center of large block of land owned by woods company.

MFZ--Stavarn/Stavsborg: 8 km. S of Solbert; 4 farms (1920)/1 farm (1959); no farms full-time, the four farms part-time (average of 2.5 ha. of cultivated land, 9.5 ha. of cultivable woodland, and no other; had telephone in 1959 but no electricity; at

end of 9-km. access road built by woods company in 1951; most of the abandoning between 1940 and 1950 by people moving to places like Solberg; single farmer about 30 years old the only resident in 1959; cluster in center of large block of land owned by woods company.

MFZ--Hömyra: 24 km. NNE of Junsele village; 5 farms (1920) / 0 farms (1959); no farms were full-time, the five farms were part-time (average of 2 ha. of cultivated land, 46 ha. of cultivable woodland, and 19 ha. of non-cultivated land, 46 ha. of cultivable woodland, and 19 ha. of non-cultivable woodland each); the site occupied about 90 years; no electricity or telephone; no running water in most of the dwellings; soil poor and dry; no road (until after the abandoning); settler abandoned between 1944 and 1951 for places like Junsele to be closer to bigger centers.

MFZ--Åkerbranna: 23 km. N of Junsele village; 10 farms (1920) / 4 farms (1959); no full-time farms, the four farms were part-time (average of 10 ha. of cultivated land, 47 ha. of cultivable woodland, and 320 ha. of woodland not cultivable each); site occupied since about 1810; got telephone in 1930 but had no electricity; no running water in at least some of houses; road built to the cluster in 1936 and daily bus service to Kränge (next to Junsele) began 1945; several people interested in moving in 1959 to get better pay and because of the absence of electricity; older settlers did not feel isolated in 1959 but younger people would not stay and many attracted recently to the Junsele power plant construction (completed by 1959); settlers who left went to near places like Junsele but some to middle Sweden.

MFZ--Tansjö: 17 km. NE of Bodum; 5 farms (1920) / 0 farms (1960); no farms were full-time, the five farms part-time (two of which had large barns); originally founded as state-supported cluster in about

1850 when people in time of depression settled to hunt, fish, and support themselves; no electricity or telephone; had very poor road; abandoning about 1950, partly due to death of owner of one farm and another family moved to Jämtland Province; now site of rebuilt house for summer occupancy by watchman of state forest covering large area nearby.

MFZ--Granberget: 18 km. NE of Dorotea village; 10 farms (1920) / 2 farms (1959); all farms part-time; was a kronotrop (state supported settlement) founded about 1914; road and railroad built through in 1915 but road poor for many years; got telephone in 1920 and electricity in 1945; site subject to considerable frost damage and is reported poor for farming; had school at one time; out-migration began before 1950 in part because settlers could not live from farming alone and in part because woods work declined; railroad station and the one store there scheduled to be closed in early 1960s.

MFZ--Jerilvattnet: 17 km. NNE of Strömsund village; 5 farms (1920) / 0 farms (1959); the five farms were part-time (two or three had small hay fields and one a small potato patch); site occupied about 250-300 years; central house in cluster had telephone and there was electricity; no road (until woods road built in it in 1957-59); abandoning because of lack of road and last family left in 1952; one of former families lived nearby, kept up house, grew potatoes there, and proposed to move back when woods road completed; at southern edge of very large area of mixed small privately-owned and large company-owned parcels of land.

MFZ/OFZ--Nybäcksriset (Nybäcken): 15 km. NNW of Hoting; 6 farms (1920) / 0 farms (1959); all six farms were part-time (average of 3 ha. of cultivated land and no other type of land each); no electricity or telephone to dwellings but telephone lines along road in 1959; abandoning forced by raising of adjacent lake's level as part of hydroelectric development; out-migration started about 1948 and some families went to Sollefteå (135 km. SE).

OFZ--Norrbygden: 14 km. N of Tåsjö village; 8 farms (1920) / 0 farms (1959); all farms were part-time; was state-sponsored settling started in 1917 on state-owned land; got telephone in 1940s (to four dwellings); no electricity; no running water at some dwellings; road improved in 1955 and ended at cluster; too much frost at site to raise barley or potatoes; principal out-migration about 1955 and four of families to farms at nearby places like Tåsjö village.

OFZ--Fjällbranna: 27 km. NW of Dorotea village; 4 farms (1920) / 1 farm (1959); all farms were part-time; site first occupied about 1860 as fabod (summer pasturage) and for hunting; got telephone but no electricity; cluster had no road suitable for trucks; last farm about to be abandoned in 1959; surrounded by company-owned land and large block of state-owned land to east.

OFZ--Lindön: 9 km. W of Gåddede; 4 farms (1920) / 1 farm (1959); all farms were part-time; site occupied about 1850; had no electricity (one farm had home diesel unit); got telephone in 1943; road built in 1918 but in poor condition in 1959; no car in the cluster; no running water in houses until recently; farming reported rather good because dry slope chosen for raising potatoes but farmers

needed large woods also to live; out-migration of young people and one older ill settler (to Gädde); cluster has large blocks of company-owned woodland close to it.

OFZ/OMFZ--Lebbikmon: 45 km. N of Gädde, 2 farms (1920) / 0 farms (1959); both farms were part-time; abandoning about 1947 because of hydroelectric development of adjacent lake; one family to farm about 15 km. S and other family to Gädde.

OFZ/OMFZ--Lebbikvattnet: 48 km. N of Gädde; 3 farms (1920) / 2 farms (1959); all farms were part-time (one a fjällägheter); had telephone but no electricity; at end of road, surrounded by very large area of state-owned land.

OMFZ--Raukasjö: 51 km. NE of Gädde; 3 farms (1920) / 2 farms (1959); all farms were part-time and both remaining were fjällägheter; no road; one family moved to Gädde in 1956; in middle of very large area of state-owned land.

The Västerbotten Strip

In Västerbotten Province changes in population were similar to those in Västernorrland. The settling history was parallel in both excepting that Västerbotten had the Lappmarksgränsen to slow down the process inland.⁴⁴ Too, its parishes had their population maxima more recently, along the coast in 1930 or 1940 but immediately inland in 1960 and in the remaining 60% of the sample strip in 1950.

Although total provincial population has continued to increase slowly in recent decades the rural population losses have followed population maxima. Thus, in 1930-1940 they began showing in some parishes next to the shore as 10-20% losses and in some others

immediately inland as 2-4% decreases. But decline accelerated after 1940. By 1950 the losses for the decade were 4-10% in the coastal part of the strip, less than 2% just inland, and 2-4% in the remainder; the percentage losses were even greater in the rest of the province. And, after 1950 these trends continued. During the same time the larger centers of population have increased and the smaller have decreased though this did not show as much in the strip as in the rest of Västerbotten Lappmark.⁴⁵

A detailed study of population migration in 1948 and 1958 was made to compare with that of the Västernorrland Strip.⁴⁶ Results were similar. All parishes had losses except in 1958 in the middle of the strip (Fig. 6-7). The total loss in 1948 was the greater and bigger losses than were inland but this may have been a product of the increasing size of minor civil divisions as one goes inland in northern Sweden. In both years women dominated each of the movements. Lastly, in both years most of the movement was by single people rather than families.

The expectation of future population numbers in the whole province is similar to that of Västernorrland. Much depends upon the state's policies with respect to agriculture and the continued development of water power potentials as well as activities in the wood products and mining industries. But Martin estimated in 1959 that the population of Västerbottens Lappmark would drop from a then 65,000 to about 40,000 by 1970.⁴⁷ This probably will be paralleled but not equalled in the coastal areas. In general, such a decline will be accomplished largely by out-migration of young people and

Fig. 6-7, Västerbotten Strip, Migration, 1948 and 1958

Church Parish	1948 Migration							Net	1958 Migration							Net
	OUT			IN					OUT			In				
	M	F	Tot.	M	F	Tot.	M		F	Tot.	M	F	Tot.			
Bygdea	54	95	149	31	55	86	-63	55	50	105	33	40	73	-32		
Nysätra	114	104	218	75	80	155	-63	96	91	187	53	65	118	-69		
Robertsfors	77	90	167	68	86	154	-13	59	78	137	37	69	106	-31		
Överklinten	44	48	92	29	40	69	-23	33	40	73	28	29	57	-16		
Burträsk	149	205	354	129	173	302	-52	135	154	289	97	122	219	-70		
Kalvträsk	46	45	91	38	46	84	-7	19	25	44	6	8	14	-30		
Bastuträsk	77	93	170	53	82	135	-35	42	42	84	49	49	98	+14		
Norsjö	127	173	300	88	146	234	-66	75	92	167	113	117	230	+63		
Mala	134	158	292	126	146	272	-20	138	144	282	94	105	199	-83		
Gargnäs	67	72	139	36	52	88	-51	47	48	95	23	33	56	-39		
Sorsele	81	99	180	66	76	142	-38	87	105	192	71	88	159	-33		

Source: Official data collected from the records of the 11 parish churches.

by the abandoning of the smallest and most isolated settlement (but not only the most isolated) while the bigger cities toward and along the coast grow.

Västerbotten is out of the ordinary in that three scholars studied abandoned settlements in its inland parts just prior to this research.⁴⁸ From the Martin study of the Lappmark section 1156 houses were located which were abandoned between 1930 and 1959.⁴⁹ Using some of these data and supplementing it with others for the period 1920-1959 the sample strip was determined to have a total of 379 abandoned residences (Fig. 6-8).

About 64% of the strip's abandoning was in the Lappmark part. At the coast (Nysätra, Bygdeå, and Burträsk parishes) the more isolated places between bigger centers were the ones abandoned or declining; about three-quarters of these were one or two farms. They, as in the same part of Västernorrland, were left because of great local isolation (no road, at the end of a road, or no electricity, or no telephone) coupled with the small size of the farms and the attraction of young and middle-aged people to nearby industrial opportunities. In the middle of the strip (Morsjö and Malå parishes) abandoning was greater in numbers but almost entirely at settlement units of one or two homes; there the people left the farms for similar reasons as in the coastal sector but went mostly only short distances to the amenities and work (much in metal industries) in the villages of Morsjö and Malåträsk (each with about a thousand residents and growing⁵⁰). Farthest inland (Sorsele parish) the same generalizations applied excepting the addition of hydroelectric

Fig. 6-8, Västerbotten Strip, Abandoned or Declining Settlement Units, 1960^a

Parish	Number of Settlement Units By No. of Abandoned Farms Per Unit ^b									Total Settlement Units
	1	2	3	4	5	6	7	8	8	
Nysätra	3	2	1	1			1			8
Bygdeå	19	13	6	3	2	1				44
Burträsk	10	5			1					16
Norsjö	7	11		1	1					20
Malå	79	2	2	1	1					85
Sorsele	69	3	3	1			1		1	78
Totals	187	36	12	7	5	1	2		1	251

^aCompiled from interviews and study of records in the Lantbruks-nämnden office in Umeå, from interviews with parish secretaries and settlers on or near the sites, and from field observations.

^bThis is the number of abandoned farms in any settlement where at least one holding has been left to revert to forest. Thus, the total number of abandoned settlements cannot be determined from this table but that is not considered significant here in as much as 74% of the abandoning in the strip was at single places and another 14% where there were only two houses.

development as a cause of abandoning and the domination of industrial work by wood products rather than metal.

In general, the time of maximum abandoning in the strip varied with the date of maximum population. Most abandoning along the coast dated back to pre-World-War-II times. Farther inland it was more recent, particularly following trends in the processing of metallic ores, and farthest inland was most recent and depended on governmental policies. In all of Västerbotten Lappmark, for example, the following abandoning of houses took place between 1930 and 1959: 37% for 1955-1959, 27% for 1950-1954, 19% for 1945-1949, 11% for 1940-1944, 5% for 1935-1939, and 2% for 1930-1934.⁵¹ There appear to be many reasons for these trends to continue into the 1970s.

No matter when the abandoning the causes were noted to be the same as in Västernorrland but with five possible exceptions in significance. In Västerbotten so much more was in settlements of one or two places. There, too, were many examples of abandoning which resulted from a road built to or through a settlement (as at Godmark and Getingstå in Västernorrland) suggesting that sociological "cement" is more important than age when measuring permanence. Third, considerable encouragement was given to Västerbotten kronotorp settlers to leave in recent years; families were paid an average of 5,000-10,000 SK (\$962-1,925 USA), and a bonus of 2,000-3,000 SK (\$385-577 USA) if necessary, to move because the state felt it could get its woods work done more cheaply by bringing the labor in cars and trucks when needed. Fourth, there probably

was more abandoning in inland Västerbotten as a result of water power developments where that cause was 8% of the total (while the rest were 30% due to old age, illness, or death, 20% because of low income, 20% on account of poor roads, and 15% due to poor houses).⁵² Lastly, the migration from an abandoned place possibly was initially for much shorter distances because 50-55% of the Lappmark settlers were reported to have moved only within the commune (and 17% to Lycksele or Vilhelmina, 12-14% elsewhere in the province, and 5-10% elsewhere in Sweden.⁵³ Most of these differences are observable in the case studies.

Västerbotten Strip Case Studies

IFZ--Krokvattnet: 16 km. NW of Ånäset; 4 farms (1920) / 0 farms (1960); all farms were part-time; formerly had about 5 ha. of land cleared for hay around the cluster; in 1960 one farm used in summer to raise potatoes; abandoned probably in late 1930s or 1940s because of the poor road to the cluster; farmers sold to the parish.

IFZ--Hösjöån; 20 km. NW of Ånäset; 7 farms (1920) / 0 farms (1960); all farms were part-time; formerly had about 12 ha. of cleared land on south-facing slope and part of old lake bed; had electricity but no telephone; had very poor road, probably unsuitable for trucks.

IFZ/IFZ--Stenbrännnet: 3km. SW of Bastuträsk; 3 farms (1920) / 2 farms (1960); all farms were part-time; had electricity, telephone, and good access road; formerly about 3 ha. of land cleared for hay; land level and well-drained; all three farms were abandoned in 1950s when settlers went to Bastuträsk to old age home or

factory work; one of present settlers is a young, single man.

MFZ/IFZ--Norrestråk: 15 km. E of Morsjö village, 5 farms (1920) / 1 farm (1960); all farms were part-time and very small; had telephone and electricity; at end of good road; two dwellings used in summer of 1960; farms probably too small; one settler died in 1949 and widow left cluster, two others moved to Morsjö village in 1950 to farm, get better work, and be closer to schools.

MFZ--Bocken: 18 km. ESE of Lycksele city (outside the sample strip); 9 farms (1920) / 0 farms (1960); was a kolonat which later became a kronotorp; had electricity and adequate road, no telephone; railroad station and school at Arvan 3 km. NW poor physical site in rolling bouldery moraine and each farm had 1/2 ha. or less of cleared land; abandoning of two families in 1947 and 1948 to Arvan and Lycksele because of poor houses and poor agriculture, five families left between 1955 and 1959 for areas near Lycksele and Malåträsk because of old age or family problems and with encouragement of state.

MFZ--Stortjärnliden: 11 km. S of Malåträsk village, 4 farms (1920) / 0 farms (1960); all were part-time farms and very small; site occupied in 1897; had no electricity, road, or telephone; may have been subject to cool summer nights and much wind and drifting of snow; all farmsteads high and dry on south-facing slopes; abandoning mostly between 1945 and 1950 because of old age or movement to nearby larger places like Äspliden.

MFZ--Stångträsk: 18 km. NE of Storuman (just outside of the sample strip); 8 farms (1920) / 0 farms (1960), all were part-time farms (most barns had stalls for 3-4 animals); was a kolonat;

had telephone (at least one dwelling); no electricity; at end of adequate road; site on top of rough moraine with coarse boulders; at elevation of 391 m. (1283 feet); abandoning by four families about 1940 to nearby places like Blattnicksele and three between 1950 and 1953 to places like Storuman, reportedly because they could not grow crops there.⁵⁴

MFZ/OFZ--Storjuktan: 30 km. NNE of Storuman; 9 farms (1920) / 0 farms (1960); all were part-time farms; at end of 12-km. access road separated by a ferry from Storuman-Sorsele road; all abandoning in late 1957 and 1958 because of rising lake level in relation to hydroelectric development; one-quarter of settlers went to nearby Blattnicksele and remainder to Sorsele, mostly to forest work rather than agriculture.

OFZ/MFZ--Valträsk-Långängen-Stortjärnliden: 15 km. WNW of Storuman (not in sample strip); 24 farms (1920s) / 6 farms (1960); is four clusters in triangle of 4 by 2 1/2 km.; at elevation of 553 m. (1814 ft.) at Valträsk; had adequate road; was originally a kolonat established in the 1920s and became a kronotorp in the early 1940s; colonists were granted 40 ha. each and most cleared 3-4 ha. but some of the farms had 6-7 ha. cleared in 1960; many of original colonists were factory or construction workers from western middle Sweden and most of them stayed only 5-6 years; more recent abandoning between 1951 and 1957, mostly because of low income as a result of not being able to grow crops.

OFZ--Haggås: 41 km. NW of Sorsele; 3 farms (1920s) / 1 farm (1959);

all farms were part-time; no road (across Stor Vindeln Lake from the Sorsele-Ammarnäs road); two farms abandoned between 1930 and 1950 by settlers who gave up farming and went to near Umeå on Coast.

OFZ/OMFZ--Gautsträsk: 5 km. ESE of Ammarnäs; 1 farm (date of origin not known) / 0 farms (1960); no road; owner died in 1952, daughter married later and moved away.

Conclusion

Stress has been placed on the process of abandoning in northern Sweden. This was done in order to provide contrast to the focus on the process of settling in northern Finland. But a discussion of abandoning in Norrland might be overdone as well. One needs to recognize that at times in the late 19th and the 20th centuries the Swedish government chose to encourage settling, directly or indirectly, in ways and areas which now draw obvious criticism. But the encouragement that was given needs to be measured against conditions at the time it was extended. And Sweden's industrialization, socialistic-democratic form of government, strong nationalist feelings, desire to raise the standard of living, wish to remain neutral in time of war, and other hopes must all be taken into account.

However, abandoning, as it is developing and being encouraged in northern Sweden at the present time, is not necessarily a bad thing. Of course, the leaving of farms causes adjustments and leaves emotionally-stirring scars on the landscape. But abandoning may be to a landscape what pruning is to a fruit tree. On the latter,

when one realizes that the tree has overgrown it is advisable to cut the excessive or non-productive growth; this can be done without killing the tree, in fact it helps it. When such pruning involves people it is likely to produce vocal reactions. So it has in Sweden.

Yet, properly done the abandoning of farms in Norrland may prove to be healthful to its economy and inhabitants in the future. Normanic planners may learn from this that there may be a place for planned temporary settlements which last only a few years or only a few decades. Or they may gain evidence that there are parts of the Discontinuous Settlement Region, like the Middle Fringe Zone, which are far more difficult to guide development in than may be supposed. The experiences in Norway, though less startling than those of Finland and Sweden, also support this contention.

Footnotes

1. The initial version of this chapter was read as a part of the Scandinavian Symposium at the Dallas, Texas meetings of the Association of American Geographers in April, 1960; in an expanded form that was published as K. H. Stone, Swedish Fringes of Settlement, Annals of the Association of American Geographers, v. 52, 1962, pp. 373-393. The latter was revised further for presentation herein.
2. The significance of inter-regional and local transportation in northern Sweden is demonstrated in three exemplary studies: W. William-Olsson, Stockholms Framtida Utveckling (Stockholm's Future Development), Stockholm, 1941; M. Lundqvist et. al. (eds.), Norrland, Natur, befolkning och näringar (Norrland, Nature, Population and Commerce and Industry), Ymer, 1942, Häft 3-4, pp. 1-594; and H. Hendinger, Die schwedische Waldlandschaft (The Swedish Forest District), Hamburger Geographische Studien, Heft 7, 1956, pp. 1-149.
3. Views from the air are best to show the areal continuity of settlement in much of southern Sweden. However, military security restrictions prevent aerial photography in Sweden without special prior permission. In lieu of such coverage useful illustrations are available in H. W. Ahlmann, Nutida Sverige (Present Day Sweden), Stockholm, 1934 and the more recent, but more restricted photography in, K. W. Gullers and G. Munthe, Sweden From The Air, Stockholm, 1952. Further, most of Sweden has been covered by vertical air photos, at various times and on various scales (see K. H. Stone, World Air Photo Coverage, 1960, Photogrammetric Engineering, V. 27, 1961, pp. 214-227) and Jordbruksdepartementet, Flygfotogrammetrisk Verksamhet (Air Photogrammetric Activity), S.O.U. 1955:26, Stockholm, 1955; the use of this coverage by foreigners generally is prohibited but Försvarsstaben (Military Intelligence, Swedish Army) has very kindly granted permission to purchase air photos of sample areas in the fringe zones for the research on this project.
4. G. Enequist in M. Lundqvist (ed.), Atlas över Sverige, Stockholm, Sweden, plate 50, 1960.
5. G. Sidenvall, ibid., plate 118, 1956.
6. It is recognized that many presently unused areas in the region of continuous settlement probably are so because of very unsuitable physical conditions (e.g., poor drainage, infertile soils, or the presence of bedrock at the surface). We may assume that the generalization made does not apply to extremely unsuitable areas under present economies and with modern technological knowledge and equipment.
7. S. Godlund, Befolkning-Regionsjukhus-Resmöjligheter-Regioner (Population-Regional Hospital-Travel Possibilities-Regions), Meddelanden från Lunds Universitets Geografiska Institution, Avhandlingar 34, 1958, map in rear pouch.

8. G. Enequist in M. Lundqvist, op. cit., plate 50.

9. Several studies of the Swedish rural-urban migration have been published of which one applying to the inner fringe zone is J. Wallander, Flykten från Skogsbygden (The Flight from the Woods District), Stockholm, 1948. For useful and more general discussions of rural-urban migrations throughout Sweden see G. Ahlberg, Befolkningsutvecklingen och urbaniseringen i Sverige 1911-1950, (The Population Development and Urbanization in Sweden 1911-1950), Stockholm, 1953 (a summary in English is available as G. Ahlberg, Population Trends and Urbanization in Sweden 1911-1950, Lund Studies in Geography, Series B, Human Geography No. 16, The Royal University of Lund, Sweden, 1956) and A. Sømme (ed.), Geography of Norden, Oslo, 1960, pp. 342-349.

10. The routes of railroads shown on Figure 6-3 were compiled from several maps of Sweden, especially the one, with a scale of 1/2,250,000, accompanying Forlags, A. B., Sveriges Kommunikationer (Swedish Railway Time Table), Stockholm, published the first of each month. The classification by geographic type of service was made by the author on the bases of the orientation and directness of routes in conjunction with the regularity, continuity, and speed of passenger train service, and, to some extent, the volume of traffic on various lines. See, for example, A. Sømme (ed.), op. cit., Fig. 12.31 on p. 340.

11. The routes of roads shown on Figure 6-4 were compiled mostly from Rikets Allmänna Kartverk, Generalkarta över Sverige (General Map of Sweden), scale of 1/1,000,000, Stockholm, 1958, 3 sheets; and Kungl. Automobilklubben och Svenska Turistföreningen, Turistkartan över Sverige (Tourist Map of Sweden), scale of 1/300,000, Stockholm, Blad (Plate) 7-24.

12. Official maps of Swedish road conditions are published at varying intervals throughout the year to show construction, snow, frost, and other restrictions on use. See Kung. Väg- och Vattenbyggnadsstyrelsen (The Royal Road and Water Construction Board), Karta över Framkomligheten på Riksvägar och Viktigare Länsvägar, Stockholm, (published for a specific date).

13. Forlags, A. B., op. cit.; this publication also includes time-tables for service throughout Sweden by air, boat, and bus and the accompanying map shows the routes of all types of surface transport.

14. Kommunikationsdepartmentet, Vägplan för Sverige (Road Plan for Sweden), S.O.U. 1958-1 and 2, Stockholm, 1958.

15. Godlund, op. cit.

16. S. Rudberg, Ödemarkerna och den Perifera Bebyggelsen i Inre Nordsverige (Abandoned Areas and the Peripheral Settlement in Inner North Sweden), Geographica, No. 33, Uppsala, 1957, Kartta (map) 10.

17. Godlund, op. cit., figures 6,7,9,10,12,13,15,16,18,19..

18. G. Chabot, L'Europe du Nord et du Nord-Ouest, Tome Second, Paris, 1958, p. 169 and Fig. 35.

19. In Finland new farming-forestry settlement is planned in detail with specific anticipation of income from timber in the first years of settlement. (See Chapter 5).

20. In addition to S. Rudberg, op. cit., see also G. Norling, Abandonment of Rural Settlement in Västerbotten Lappmark, North Sweden, 1930-1960, Geografiska Annaler, v. XLII, 1960, pp. 232-243 and B. G. Rundblad, Problems of a Depopulated Rural Community, in D. Hannerberg et. al. (eds.), Migration in Sweden, Lund Studies in Geography, Series B, Human Geography No. 13, Lund, 1957, pp. 184-191.

21. Rudberg, op. cit.

22. Kungl. Generalpoststyrelsen et. al., Kommunikationskarta över Sverige, (Communication Map of Sweden), scale of 1/700,000, Stockholm, 1948, northern sheet.

23. M. Lundqvist, op. cit., plates 52 and 53; S. Rudberg, op. cit., map 5.

24. M. Lundqvist, op. cit., plates 53 and 54; S. Rudberg, op. cit., maps 6-8; M. Lundqvist et. al., Norrland..., op. cit., pp. 191-232 and 307-310.

25. G. Norling, op. cit., Fig. 1 on p. 234. For an interesting study of the area southeast of Östersund See G. Bodvall, Periodic Settlement, Land-Clearing and Cultivation, Geografiska Annaler, v. 39, 1957, pp. 213-256.

26. S. Rudberg, op. cit., map 9.

27. We have all of these mapped, as of 1959, on the 1/300,000 Swedish Turistkartan (Tourist Maps) of the area from western Jämtland Province, included in the program, to the Finnish border.

28. Much of the data on old and new subsidies and loans was obtained from interviews with and manuscripts by Director Per Porenus of Lantbruksnämnden (Agricultural Commission) in Västernorrland Province.

29. It should be remembered, however, that there are some restrictions on the sale of Swedish farms. Taxable agricultural property generally can not be acquired without approval of the provincial agricultural commission; exceptions are the state, a municipality, an owner's immediate family, and a few other specified cases. Permission usually is not granted if a prospective purchaser is simply investing capital or if the action would endanger or break up one or more existing farming units. From Swedish Code of Statutes, No. 272, 3 June 1955.

30. Loans for home building are limited to less than 55,000 Sk (\$10,500), the house or apartment must be within a certain range in size, it must have certain facilities (e.g., central heating, electricity), and the construction must be of high quality. However, the annual cost of operating such a home must not exceed one-fourth of the owner's annual income.

31. O. Gulbrandsen (comp.), Report for Sweden on Planning of Development in Rural Areas with Special Reference to Northern Sweden, Luleå (?), mimeo., p. 11

32. The fractionation of some northern Swedish farms, even after two major national consolidation programs in the last two centuries, is nearly unbelievable unless one has had experience in an area like the Netherlands. Some Västernorrland farms (of which we have copies of the Lantbruksnämnden maps) have tens of parcels, some of which may be only three feet wide and a half mile long. For an excellent explanation of the national consolidation attempts see S. Dahl, Strip Fields and Enclosure in Sweden, Scandinavian Economic History Review, v. IX, 1961, pp. 56-67; for an equally good description of the effects of those laws and modern planning in Västernorrland see P. Porenus, Norrgissjö By i Ångermanland, Kung, Skogs- och Lantbruksakademiens Tidskrift, Årg. 95, 1956, pp. 131-151.

33. One suggested expectation is "...that the number of farmed holdings will go down 80-90% within a period of 10-20 years. A frightening prospect!" from P. Porenus, Farming on the Fringes of Settlement in Northern Sweden, Härnösand, July, 1964, mimeo., p. 4.

34. (no author), Y 70, Länsutredning för Västernorrlands Län (Report on Västernorrland Province), Sundsvall, 1962, map 2 on pp. 32-33.

35. The only way these data could be obtained was by hand tabulation from the hand-written church records, the official documents for the Swedish census. At all 14 churches the parish priests graciously permitted this work and at some they participated in order to be especially helpful or to protect something considered as confidential in nature. All of these data are plotted on a series of 168 base maps to summarize the in- and out-migration in the strip for 1948 and 1958 with respect to all Sweden. In addition, certain other annual totals were obtained for all ten years of 1948-1958.

36. (No author), Y 70, op. cit., p. 203.

37. ibid., p. 203.

38. Letter from P. Porenus to K. H. Stone, number 2698, 20 March 1957, Härnösand, Sweden.

39. In no instances were the regional office data exaggerated and for several parishes they were low. More than 90% of the 105 settlement units tabulated were observed in the field at least once; many possible others were not added because of the difficulty of establishing whether they were just unoccupied when observed or abandoned.

40. Copies of the original sheets were obtained through the courtesy of Director Per Porenus. All the data were plotted on a 1/200,000-scale map of the strip; this is the basis of these generalizations.

41. From various source materials an ownership map of the Västernorrland Strip was compiled at 1/200,000 scale. It was used for the generalizations in this chapter.

42. M. Lundqvist et. al., Atlas. . . ., op. cit., plates 1-42.

43. These are Gudmunstjärn, Hosjön, Storbrännan, and Godmark in P. Porenus, Illustrations of the Advance and Retreat of Rural Settlements, paper given in Symposium S Sw 2 at the XIXth International Geographical Congress, Stockholm, 1960. In particular Godmark is significant as a place founded in Viking times and where abandoning began immediately after World War II but accelerated with the opening of the first road into the cluster in the late 1950s.

44. M. Lundqvist et. al., Norrland. . . ., op. cit., pp. 255-282.

45. G. Norling, op. cit., Fig. 3 on p. 237.

46. At each of 11 parish churches the original records of in- and out-migration were hand copied to disclose total numbers, sex, and points of origin and destination for the two sample years.

47. Stated in conference in Umeå on 27 June 1960.

48. L. Hartin, Västerbottensutredningen 1960, Västerbottens Lappmark, Umeå. 1960, mimeo. and 1/300,000 map in addition to S. Rudberg, op. cit., and G. Norling, op. cit.

49. G. Norling, op. cit., p. 239.

50. S. Dahl, Tatörtsregeister, Västerbottens Län, Stockholms Handelshögskolan (Stockholm School of Economics), c1950, mimeo. A compendium similar to this was compiled for all the other provinces in Sweden at the same time under the general direction of Professor W. William-Olsson of that institution.

51. G. Norling, op. cit., Table 5 on p. 239.

52. ibid., p. 241.

53. ibid., p. 240.

54. See also ibid., pp. 239-240.

Chapter 7

Norwegian Zones and Procedures¹

Compared to the previous analyses of Finland and Sweden Norway is somewhat similar to each and somewhat dissimilar to both. Like Finland, Norway had many settlers displaced during World War II and at the end of hostilities most displaced Norwegians returned to their same pre-war sites. Like the Swedish government, the Norwegian administration encouraged new rural settling, and for the same reasons, during this century. As in Sweden there has been recent rural depopulation but unlike in Sweden there have not developed large Norwegian areas of abandoning. In general, then, the differences in the processes of rural settlement in recent decades in these three countries might be summarized as: Finland has been a country of regional advancing in the north and Sweden one of rural retreating in the north while Norway has been one of local advance in several parts, stability in some, and weakening stability in others. Here the emphasis is placed on areas of local advance in order to see if how it was accomplished may be repeated as a successful process of new rural settling in Norway.

When the measures of isolation (Fig. 4-1) are applied to Norway roughly 95% of it falls into the Discontinuous Settlement Region. This is all but a coastal strip in the south, extending about 1100 miles (1770 km.) on the NE-SW axis of the nation and varying in width from 225 miles (362 km.) in the south to the country's varying widths in the middle and north. Within the region are the

four fringe zones, in a more complex distributional pattern than occurs in either Sweden or Finland. This DS Region grades on the south into one of Continuous Settlement through a narrow zone, shaped like a U, between latitudes 59°N and 62°N . The zonation on the eastern side is sharp and easily distinguished by direct observation or on maps but the western part of the zone, north of Stavanger, is more arbitrarily defined. Still, this CS/DS zone is the only major separation of type of rural settlement in Norway for there is no Unpopulated Region, as in Finland and Sweden.

Continuous Settlement Region

The CS Region is about the southern coastal five per cent of Norway (Fig. 7-1). It starts on the west coast about half way between Ålesund and Bergen and is a strip about 25 miles (40 km.) wide on south- and eastward to the mouth of the Oslo Fjord where it doubles in width. The region includes most of Norway's oldest areas in terms of human occupation. There, also, people have changed the original landscape the most by clearing and building to the point where there are large areas of continuous distribution of permanently occupied residences; from Stavanger to north of Bergen these are broken by the fjords but from the former city eastward the areas generally are uninterrupted. A few uninhabited spots, however, break the continuity near the Swedish border where the southern end of Kjölen Mountains extends into the CS Region.

Population densities vary. Near the cities of Bergen and Stavanger and along the western side of the Oslo Fjord they are more

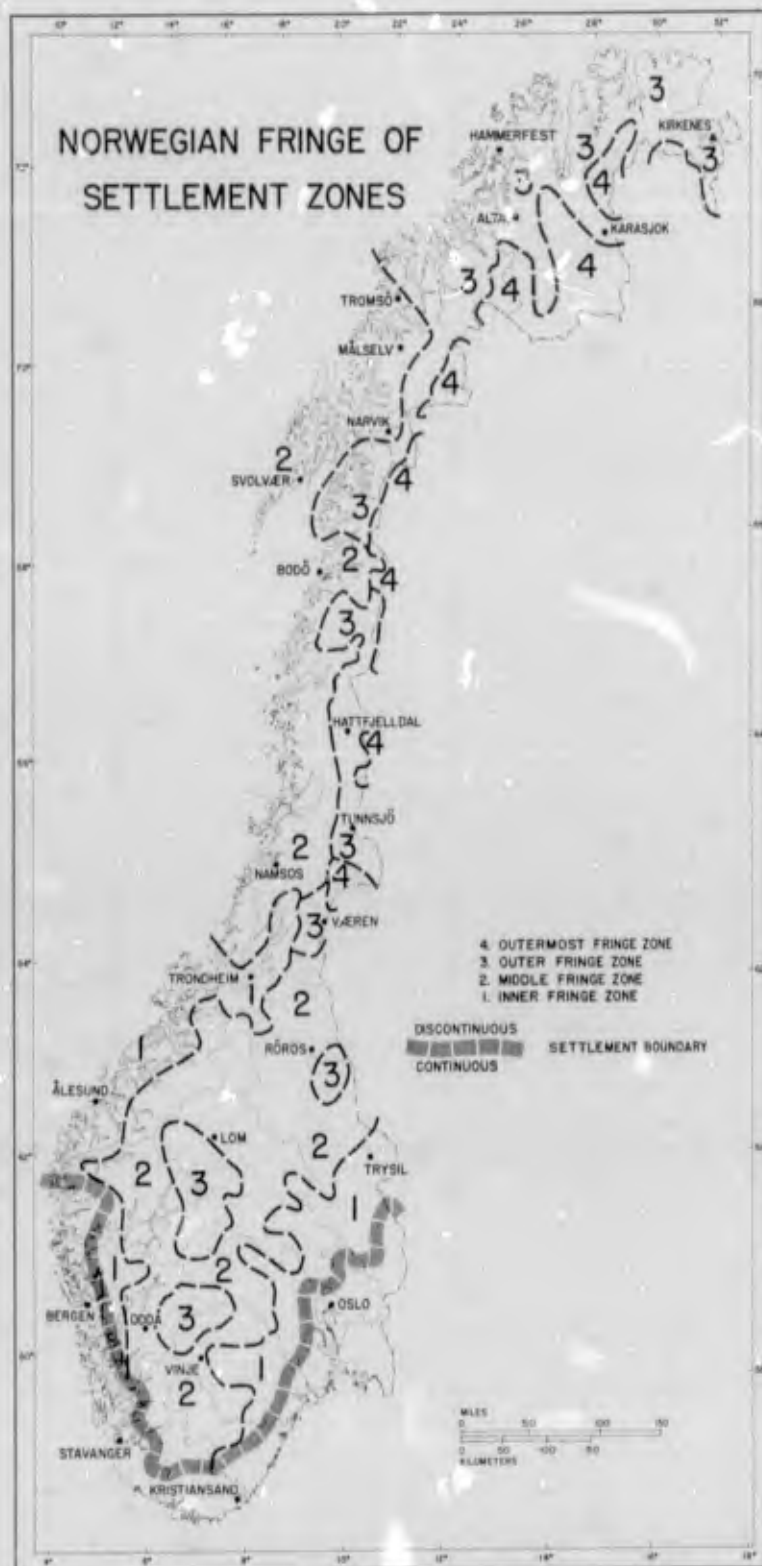


Fig. 7-1

than 125 people per square mile ($48/\text{km}^2$) and from the southernmost point northeastward they are 50-125 per square mile ($20-48/\text{km}^2$) but there are inland parts of the CS Region where the densities are less than 25 persons per square mile ($10/\text{km}^2$).³ The three urban areas included have Norway's first, second, and fourth cities in size: Oslo with nearly 600,000 inhabitants in the geographic city, Bergen with over 150,000, and Stavanger with nearly 67,000. The growth of all the region's cities in the past three decades plus emigration to the U.S.A. and overpopulation for the resources available have combined to foster population losses in the region, especially between Kristiansand and Stavanger.⁴

The region has at least good accessibility in the western coastal part and good to excellent in the rest. From Stavanger northeastward all residents are 12-13 miles (19-21 km.) from a railroad, usually the inter-regional type. There, too, the road net is dense though inter-regional highways are only around Oslo and east of the Oslo Fjord; every dwelling is within 5-8 miles (8-13 km.) of local roads going in at least three major directions. North of Stavanger only Bergen is served by railroad, also inter-regional, and most of that coast has local roads oriented E-W or NE-SW. But all this land transport is supplemented by considerable freight and passenger traffic the year round on water and in the air. Oslo, Kristiansand, Stavanger, and Bergen are major ports for international merchant marine traffic and only Kristiansand is not a primary air traffic center as well. In addition, local boat traffic supplements all movement and especially along the western coast this

makes up for the lower numbers of and breaks in land routes.⁵

Thus, this part of Norway has a low degree of both regional and local isolation. Even where dependent mostly upon water transport settlers in the region can get and give aid quickly from or in several directions and at nearly any time of the year. Although new rural settling should be easiest in this region both the best and better lands have long since been occupied and most unused parts are primarily exposed bedrock or excessively poor morainic areas. With the additional national economic development expected and the government's encouragement of the production of food and feed for domestic use it is likely that farms in the CS Region will remain occupied and become larger while some of the rural population is lost for good. This is not so in the region to the north.

Inner Fringe Zone

North of the eastern and western ends of the CS Region are the two parts of the Norwegian Inner Fringe Zone. These are 50-100 miles (80-160 km.) apart and each is 25-75 miles (40-120 km.) wide with a main axis oriented NE-SW; the eastern part is about 275 miles (442 km.) long while the western extends about 400 miles (643 km.) (Fig. 7-1). The latter is primarily a coastal area while the eastern one is entirely inland. However, both have highly irregular internal boundaries which are sharply defined.

Each section has interrupted inhabited areas (Fig. 7-2). In the eastern part there is a general linear pattern, oriented NW-SE, which becomes strong near the inland side of the zone; dwell-

ings there are on the bottoms and sides of deep valleys. In the western part the inhabited areas are more interrupted, mostly by water bodies, and lineation is dominant where houses are on strand flats or in valleys; thus, many of the inhabited areas there are parallel to and adjoin the coast and some are at right angles to it.⁶

Though the population in the IFZ is predominantly rural there is a moderate percentage that is urban. The eastern section's largest city is Hamar, with about 18,000 people, and there are others with 4,000-8,000 inhabitants (e.g., Elverum 4800, Gjøvik 6000, and Notodden 7200). But the western part's cities are larger with Trondheim, the country's largest, having more than 97,000 residents,⁷ Alesund more than 19,000, Kristiansund over 16,000, Molde about 7,200, and Steinkjer over 4000.

The transport facilities of the zone hold the regional and local isolation to low degrees. In the eastern part most people are less than 12-15 miles (19-24 km.) from a railroad, three of which are inter-regional on which the CS Region could be reached in two hours or less practically any day (Fig. 7-3). There, too, are four inter-regional highways and, in the inhabited areas, a network of local routes so dense that most dwellings are less than 3 miles (5 km.) from three or four and most of the rest are within 5-6 miles (8-10 km.) of roads running in two to three major directions (Fig. 7-4). But the western section is much different. In that part one inter-regional and one local rail line go through just the Trondheim Fjord basin sector and one local line, scheduled for abandonment, barely touches the zone at Åndalsnes. Inter-regional

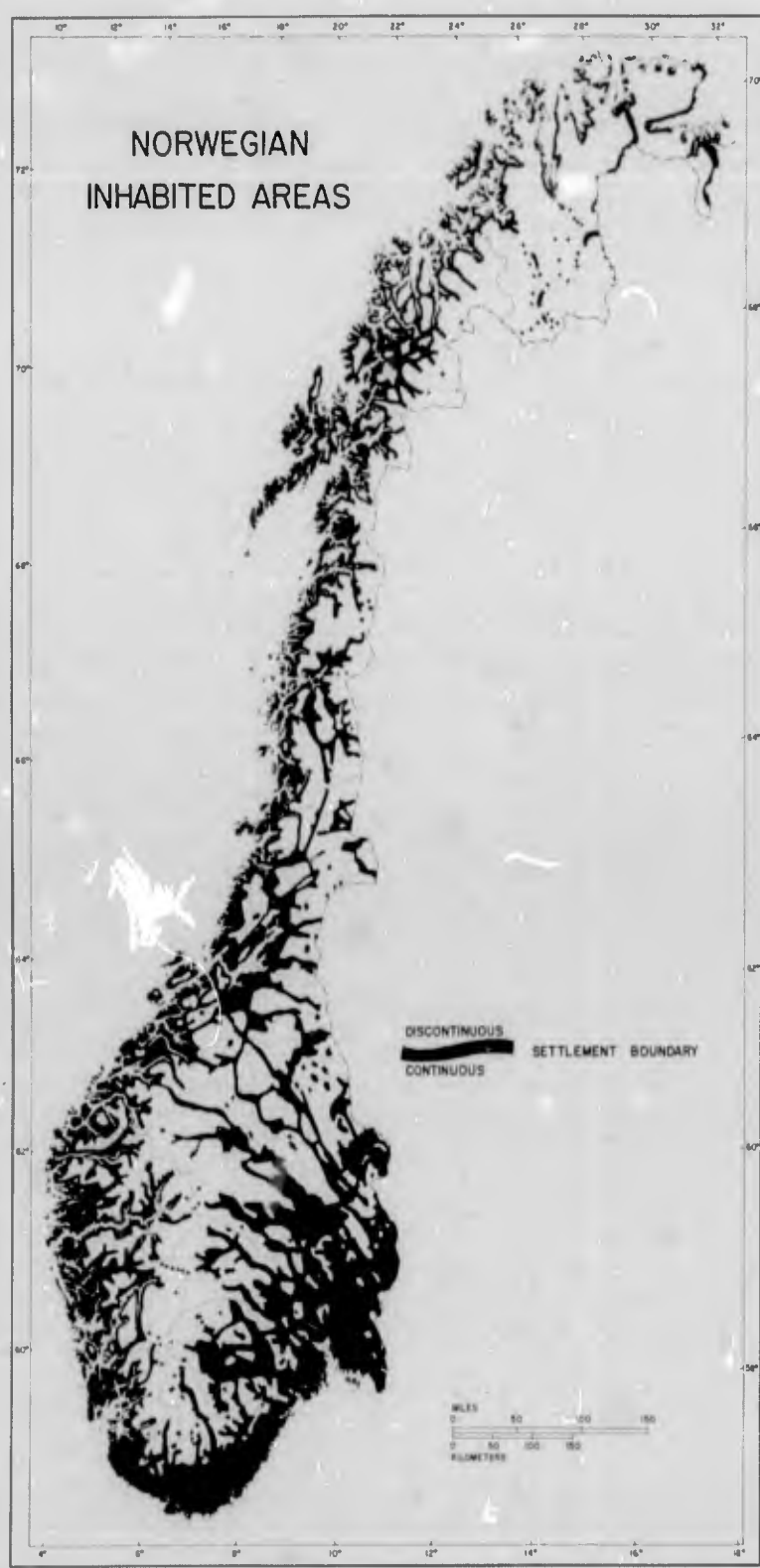


Fig. 7-2

highways serve the basin sector north-south and eastward and the rest of the zone has some local roads, most of which follow the shores or major valleys and must be used in conjunction with ferries, while some of the other routes are closed for short periods in winter by snow on inland from the IFZ. Further, inter-regional and local air transport is available at Trondheim. But the saving grace of this western part is the boat travel. If not for that at least a portion would be Middle Fringe Zone but with it inter-regional and local movement is available at almost any time from all localities. Hurtigruten (The express-route) vessels call at the principal ports daily on the runs between Bergen, Trondheim, and Kirkenes (in extreme NE Norway). Into these places and smaller centers, and even individual farmsteads, go daily and all year many small craft to collect milk and cream, pick up fish, deliver passengers, and transport all sorts of freight. Thus, cheap movement may be accomplished regularly in a day or less to either Trondheim or Bergen even though movement inland may be restricted seasonally and is more expensive in time and cost to reach a major CS center.

Both before and after World War I the Norwegian government, like the Swedish one, desired to increase its food production and to decrease emigration to the U.S.A. Two of the programs initiated affected parts of the Inner Fringe Zone and provided many administrators with useful tips about new rural settling procedures. In one instance the society of Ny Jord (New Land) was formed in 1908. A partial result was the founding of six farming-forestry colonies between 1929 and 1953 in the northern portion of the eastern part of the IFZ

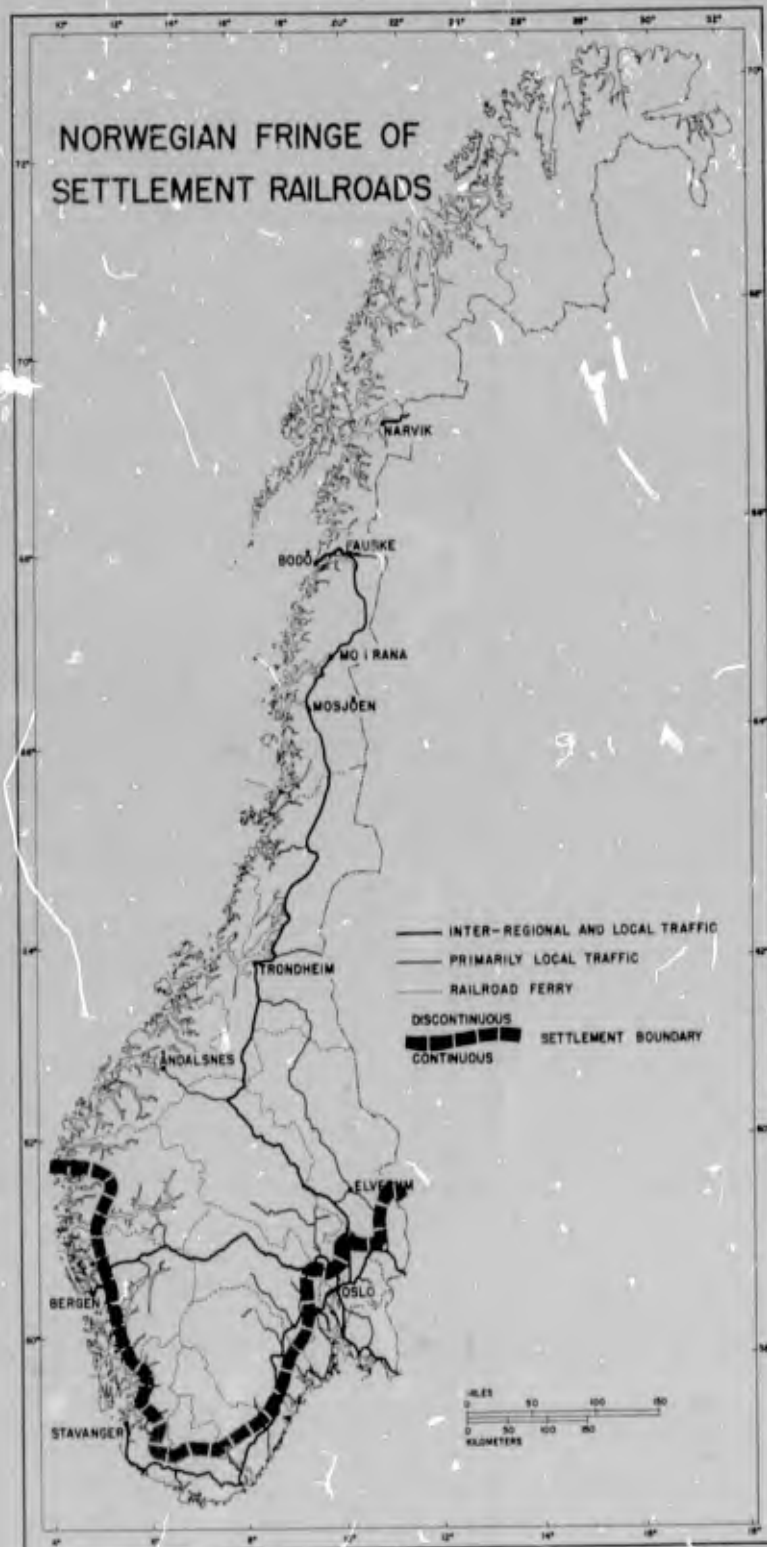


Fig. 7-3

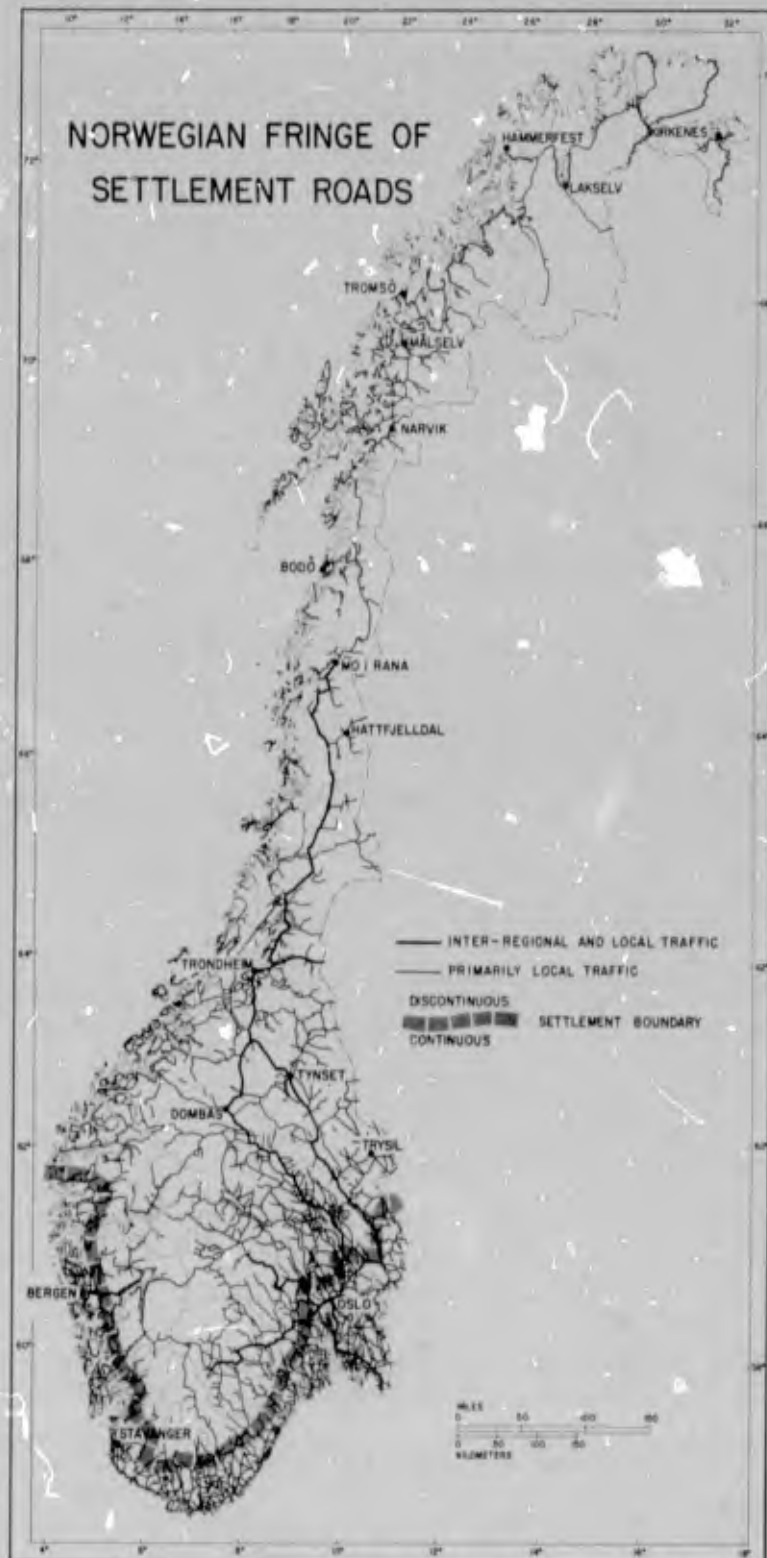


Fig. 7-4

and 15 farming-fishing colonies in the western part, especially north of Molde, between 1918 and 1945.⁸ The second line of action was the bureisere (homesteaders) program which began about 1920 and aimed at increased agricultural production. This was received very warmly in the northern portion of the eastern IFZ and also by many farmer-fishermen throughout the western part. The result of both programs was a significant stimulus to agricultural settling in the Inner Fringe Zone adjacent to the Swedish border (see Trysil District in the sample areas below). From this area Normanic planners have experiences to transfer.

In general new group or individual settling may be promoted in the best remaining unused parts of the Norwegian Inner Fringe Zone with good possibilities of permanence. Experienced people and established transport routes are all ready available so the principal needs can be provided new settlers. But, as in the CS Region, the best land, agriculturally and locationally, is all ready occupied.

Middle Fringe Zone

Norway's Middle Fringe Zone also is in two segments. One is a southern inland section, between the two parts of the IFZ, and the other is in the middle of the western Norwegian coast (Fig. 7-1). The former begins next to the CS Region between Stavanger and Kristiansand (without any transition through an IFZ), extends northeastward about 350 miles (563 km.) and averages about 125 miles (201 km.) in width, but has quite irregular sides and is interrupted by three occurrences of Outer Fringe Zone. Fifty miles (80 km.) away is the second section which starts at Trondheim Fjord. This

goes northward along the coast, including the Lofoten and Vester-Ålen Islands, for about 500 miles (805 km.) as a strip about 75 miles (121 km.) wide.

Inhabited areas are predominantly long lines in the southern part and they are separated by uninhabited uplands roughly 7-15 miles (11-24 km.) apart and of varying lengths from a few tens of miles to about 95 (150 km.). An occasional village has a thousand or more people but most places have fewer than 300 and are local shopping or shipping centers for the farmer-foresters. By contrast the west coastal section's dwellings are mostly in groups of clusters and short lines and the separations between them, though shorter, are usually rougher surfaces. Further, the aggregated population is greater proportionally and in the size of individuals, ranging from Tromsø with 21,000, through Bodø with about 18,000 and Narvik with almost 16,000 people, to Namsos with at least 6,000, and to many centers with 1,000-2,000 residents. All are transport foci and places for either fish collection (if not processing also) or ore reduction. Thus, the people-to-people relationships are generally closer in this section than is usual in an MFZ.

Both regional and local isolation are moderate in the southern part. There are only three railroads, two of the inter-regional category, which go through to Bergen and Trondheim (Fig. 7-3). Two inter-regional roads also traverse this part of the zone to Trondheim and a third just reaches its southern districts (Fig. 7-4). Though it is common for the residences to be on or within a mile (1.6 km.) of a road the movement over some may be slow at any time or

completely blocked seasonally.

The west coastal portion also had moderate degrees of isolation. In its southern section is Nordlandsbanen (the Northland Railroad), built by the Nazis and rebuilt after World War II by the Norwegians;⁹ this serves the zone's inland ports of Mosjøen, Mo i Rana, and Fauske and now goes into Bodø (Fig. 7-3). Two other Nowregian Sea ports have rail connections, too, Namsos via a local line from the east and Narvik by an inter-regional route through Sweden. Paralleling the railroad in the southern sector is an inter-regional road, State Highway 6, as far as the steel center of Mo i Rana, but on northward this is classified as primarily local. A few other local roads run eastward from this, some going through the Keel Mountains into Sweden and some not, but north of the latitude of Bodø the roads are interrupted by ferries, limited to individual islands or fjords, and are subject to being closed seasonally. Thus, they do not provide an all-weather net connecting the inhabited areas.

However, sea and air routes do. The express route includes coastal ports northward to Bodø and then Lofoten and other insular cities northward through Tromsø. This is fed by a multitude of smaller-vessel runs, some seasonal, which include centers of less than 100 people but this shipping makes up in part for the absence of roads and railroads. Meanwhile, daily air service by an inter-regional route goes from Bodø to Oslo and in the summertime local seaplane service is available from the former on northward through the islands.

Within the MFZ new 20th-century rural settling was scattered all over but in significant numbers was concentrated geographically. Ny Jord colonies, some among the largest of that type, were established mostly in the Vesterålen Islands, just north of the Lofotens; they were founded between 1923 and 1944. On the other hand there were large numbers of burgisere (homesteaders) in the southern part's northeastern and south-central sectors as well as in the northern part's southern coast, Lofoten and Vesterålen Islands, and the general Målselv district in its north.

In general the rural settlement of this zone has the usual great sensitivity to changing conditions. In the southern part major decreases of rural population between 1930 and 1950 occurred in southern districts, along the western edge of the zone, and in its northeast.¹⁰ In the northern MFZ there was a similar loss but there, too, World War II bombings and Nazi reprisals destroyed many cities as well as individual farms. The recovery demonstrated strong nationalistic feeling and stubborn individual effort-- the price paid was high.

As a whole Norwegian Middle Fringe Zone rural settlement is rather delicately balanced. On the map of inhabited areas there may appear to be much space for new settling but this is misleading; in the southern part much of this land is too steep, rocky, or high and abandoning may be in the near future while in the northern part the surfaces are too rocky, steep, or poorly drained over much of the zone. Perhaps new group settling might prolong the life of some presently occupied areas in the zone and even open up some

new ones, particularly in the northern part. But great care must be taken, if the decision to develop more is made, to not only protect new settlers but to not upset the economics of those now there, especially in view of the great effort to develop industry in the north.

Outer Fringe Zone

Norway's Outer Fringe Zone occurs in six separate sections, distributed throughout the DS Region in as complex a pattern as may be found in Norden (Fig. 7-1). In the southern part of the nation the four occurrences are inland and are generally oval shaped with one axis about 35 miles (56 km.) long and the other from 25 to 100 miles (40 to 160 km.). North of the latitude of Namsos the fifth part is inland and linear, being 25-50 miles (40-80 km.) wide and merging over the border with the same zone in Sweden. But the last part, north of Bodø's latitude, is both coastal and inland, has a width of 40 to more than 100 miles (64 to more than 160 km.), a length of 450 miles (724 km.) NE-SW, and also is tied to Swedish counterparts to the east.

The sharpness of the edges of most of these six areas is a reflection of the zone's moderate regional and high local isolation.¹¹ The distributional pattern of residences is generally clusters of spots and short lines but there are a few long lines too (Fig. 7-2). Settlers often have someone near in two or three directions but as often it may be only one or two. And many are without telephones.

Furthermore, the zone's accessibility is poor. Inter-regional railroads cut through two narrow sections, southeast of Bodø and

east of Narvik, but otherwise the zone is without rail service (Fig. 7-3). In roads, not only does no part have an inter-regional highway but many sections are at the ends of widely spaced and short routes, some of which are usable for only six to eight months in a year. And several portions of the zone have no roads at all; where these are inland and inhabited settlers must resort to travel on foot, on skis, or with the aid of an animal. In the coastal parts roads are narrow and short, if present at all, and nearly everyone depends on small boats for movement. Exceptions are the cities of Hammersfest and Kirkenes, each with roughly 5000 inhabitants, where longer roads are present (Fig. 7-4), where hurtig-ruten vessels call daily (and at a few other small centers as well), and where, respectively, there is summertime and all-year local air service.

Although the OFZ usually is unsuitable for settling, parts of this zone in Norway have been made the exception. This is largely because the Norwegian government wanted settling there for combinations of political, economic, military, and physical reasons. The country is, after all, long and narrow, with much in mountains and little in agriculture but with a coast open to shipping at all times, good fisheries, some highly mineralized areas and others suitable for hydroelectric generation. Development could be expected. The mining of low grade iron deposits near and the concentrating of them at Kirkenes at the beginning of this century required the development of port facilities and a city, old places like Hammerfest have been major centers for the long-existent fish-

ing industry, and still other areas were opened agriculturally to support the regionally isolated cities and villages of the zone. Most of the farming is part-time, in combination with fishing along the coast or forestry inland, and much of the increased acreage since 1920 was a result of the bureisere program. Major expansion took place in the Hattfjelldal district (latitude 66° on Fig. 7-4), just southwest of Narvik, just eastward of Tromsø, and in the vicinity of Kirkenes; at least two of these were accompanied by new settling. Even though much of all this was levelled during World War II the redeveloping, at the same sites, began immediately thereafter under the governmental North Norwegian Development Program.¹² And developing and new settling continue. In this zone, then, has been a forced growth (accelerated since 1951) worthy of detailed study to measure the costs and the permanence of new settlements placed in a zone where such expansion might not be expected nor, possibly, be recommended.

Outermost Fringe Zone

Along Norway's eastern border and north of the latitude of Namsos is the Outermost Fringe Zone of settlement (Fig. 7-1). Of the seven areas four are very narrow extensions of the zone in Sweden (Chapter 6). Two of the others are parts of the ONFZ in Finland (Chapter 5) and only that S and SW of Karasjok is primarily Norwegian. It is two-pronged and has maximum dimensions of about 100 miles (160 km.).

This is an area of both high regional and high local isolation. Only a few hundred people are present, all Lapps, and most are

in that small minority of Sames now dependent upon the raising of reindeer. Inhabited areas are some widely spaced dots (Fig. 7-2) which represent single dwellings (often sod and rock tent-shaped structures and always near water) or poorly defined clusters of two or three families. But even these are becoming fewer in number as the Lapps move to nearby Outer Fringe Zone villages, like Karasjok and Kautakeino (about 400 and 300 inhabitants, respectively), where markets, churches, schools, and amenities encourage them to settle and give up the nomadic life.¹³

Probably 85-90% of the zone may be said to be uninhabited. All of the area is hills, much is covered with swamps and lakes. No part of it is reached by mechanized transport routes except along a snowmobile way from Karasjok westward to Masi and Kautakeino and occasional summertime travel on a road southward from the latter into Finland. Thus, travel times are both unpredictable and long and inasmuch as there are no phones closer than the two OFZ villages settlers are dependent upon themselves in case of need.

As elsewhere the OMFZ is the one of maximum difficulty of just maintaining the settlement that is there. Were it not for the natives the area might be uninhabited. This is perhaps what it should be.

The Four Norwegian Sample Districts: General

Conclusions about Norwegian rural settling procedures which might be used in Nornam were determined from two types of study. The first was general research at national offices in Oslo and during field work throughout the country in five seasons between 1955 and 1964. The second was detailed observation and analysis in four

sample districts. These are, from south to north (Fig. 7-1): Tr 1 District (NE of Oslo), Hattfjelldal District (S of Bodø), Målselv District (NE of Narvik), and the Pasvik Valley District (S of Kirkenes along the Soviet border). They were selected to provide representative variety of rural settling in different fringe of settlement zones, at various times of starting, with differing kinds of sponsorship, and with mixtures of other physical and cultural characteristics significant nationally and locally. Here, too, as in Finland, it is felt that only the foundations of study have been established and that conclusions will remain tentative and incomplete until further research discloses long-run trends more certainly. However, this work is likely to be just as productive as that in Finland and Sweden because so much Norwegian settling was directed by a private organization and because new settling there was pushed in the Outer Fringe Zone.

General: Population Change

Though none of the samples dates from the time of earliest settling in the country¹⁴ each is representative of at least one major national change in numbers or location since about 1800. After that date the first significant variation was the loss of people by emigration. This was of slight importance until 1865 but from then until 1930 it was a major element in Norway's population development.¹⁵ In these 65 years 87% of the total recorded emigration (about 900,000 people) took place, the greatest being 1880 through 1883, 1887 and 1888, and 1902 through 1907 when the annual loss was 20,000-29,000 persons. The greater numbers were from the rural districts and the predominance was males who were in farming, fishing,

and forestry. Their principal stated reason for going was lack of opportunity for profitable employment in Norway, especially in comparison with the U.S.A. where most of them went. After 1911 the yearly departures average about 8000 to 1930 when they became a few hundred per year until 1948 since which emigration has been about 2,000 persons per annum. The total effect on the rural districts was to slow their growth considerably, until 1930 reducing it from a quarter to more than a half of the excess of births over deaths.

The total population has grown steadily but slowly since 1900. Then there were about 2.2 million people in the country. Since then the average annual growth has averaged about .8%, being just that figure for the years 1958-1964.¹⁶ However, another national change was taking place. This was the more rapid increase of population in the towns and cities. Whereas in 1815 townspeople were 9.8% of the total the number grew slowly to 15.5% in 1865, to 18.3% by 1875, to 23.7% in 1890, to 28% in 1900 since then it increased slowly to 32.1% in 1960.¹⁷ This has been paralleled by a steady decline of the birth rate, about which concern was expressed before and after World War II¹⁸, from 28.5 per 1000 in 1901 to 17.5 per 1000 in 1963. At the same time the number employed in manufacturing industries increased rapidly to nearly 35% in 1960 while those in agriculture and forestry declined to almost 15%.¹⁹ Thus, rural communities in many parts of Norway have been confronted with increases in depopulating, primarily younger people moving to the cities or to industries from farms too small or sites too isolated. The problem here is similar to that all ready discussed for Sweden excepting that there

are no large areas of abandoning, in fact the losses often do not show in the statistics for the minor civil divisions.

Another major Norwegian population change was that resulting from World War II. The nation was occupied by the Nazis from 1940 to 1945 and during that period many persons fled or were caused to flee the country. Several cities were damaged severely by bombing. But the greatest effect on the rural landscape was the Nazi burning and blowing up of farm buildings, particularly in northern Norway. This was vengeful action, the same as took place in northern Finland, which caused only temporary changes in population distribution; the Norwegians, like the Finns, returned and rebuilt on the same sites.

However, as a result of the war-time destruction more information on population changes was obtained. Immediately after the war an agency, Brente Steders Regulerings (Burned Places Regulation), was formed to aid the recovery. The commission required the preparation of maps showing changes in numbers of people, by minor civil divisions in all of Norway, for the periods 1920-1930 and 1930-1946.²⁰ This was the first thing on distribution since the Söderlund work of about 1920²¹ and it also included the latest census data of the time (the 1940 census was postponed because of the war to 1946). It is on these maps that the continual percentage gains in district populations may be seen over most of Norway, the major exceptions being in the aforementioned parts of the Middle and Outer Fringe

zones in southern Norway. Thus, local increase of population in recent times has been more significant nationally than the local decreases and this is one of the reasons for the selections of sample districts made.

General: State Support of Rural Settling
to the Early 20th Century²²

Farming began in Norway in the Bronze Age. Some of the places settled then still exist and are identifiable by names including vin. Thereafter, through the Iron Age and the period of the sagas, the development of new farms took place slowly. But the utmarka (hill or forest pastures) remained largely unoccupied and eventually became state land, the King's commons. Then, in the 12th century, extensive settling started. This lasted for 250 years during which utmarka were occupied, in part because of a law of 1274 exempting a homesteader from public obligations for three years. However, this was not automatic as a new settler had to prove intent of permanence and undergo inspection at the end of the third year. By the mid-14th century farms were widely distributed in Norway though most were the small subsistence type and only a few were large estates (herregårder).

Arrival of the Black Plague in 1349 stopped the rapid spread. This effect remained for about three centuries during which the government did its best to get numerous farms abandoned during the plague back into use and, therefore, on the tax rolls. By laws in 1471, 1540, and 1557 many homesteaders acquired former farms free and only had to settle on and operate them. In the early 1600s

the Danes encouraged "reclamation", or new settling, by tax relief for three years, then six, and then to the death of the one who cleared the land. This led to many new small farms (husmannsvesen: workers on their own farms) being founded. After 1660 a number of Danish edicts were designed to promote homesteading but the best known of these early supports was a law in 1752 which provided tax exemption for 15 years if unsettled land was cleared.

After 1750 the state's policy was different because of a growing population. Rather than increasing taxable land the desire was to take care of more people in it. Farms were divided and tenancy was encouraged so that between 1802 and 1855 the number of farms grew from about 79,000 to approximately 123,000, excluding Finnmark²³ in the extreme north. But thereafter the numbers dropped sharply because of dissatisfaction with the system by both owners and tenants. Private ownership became less desirable and the state began to take steps in the 1890s to help this.

In 1902 a state bank was founded to make loans to rural workers. These were for purchase of land and the construction of houses; they went to 90% of a maximum allowable valuation and size and the interest rates were low. Then in 1917 was established Småbruks- og Boligbanken (The Small Farm and House Bank). This agency, still operating, was to make loans as before but for larger places so as to encourage borrowers to develop full-time farming units. Through these banks the number of small farms increased. However, the owners of these and of all-ready-existent numerous small places also had to work in forestry, fishing, or other occupations to

make a living and the decline of this secondary work at the turn of the century forced the settlers to more dependence upon their land. This provoked more state aid for clearing. A loan fund for such had been started in 1857 but before World War I little had gone to small farms and the total available was too small for the state's needs.

Thus, by the time of World War I there was pressure within the country for state support of new farms. This was increased by the feeling of many Norwegians that farming was a way of life they desired as well as by the hardships of reduced foods as a result of blockades during the war. And from the state's viewpoint the pressure to act was augmented by the great emigration that had been going on.

General: The Ny Jord (New Land) Society Program

Before 1920 state support of new rural settling was only legal and financial. Money was appropriated for loans to expand the cultivated area of existing farms and to create new ones. Laws were passed to formulate the procedures and limits of the loaning. But until 1920 the state did not participate directly in the process of settling. Instead it granted funds, as it still does, to one nationwide private agency, 10 agricultural societies (usually organized on the fylke (county) basis) and a few kommuner (townships) for the settling operations. The first of these, Selskapet Ny Jord (The New Land Society), is significant here because of its long experience in rural settling; it is, in fact, a treasure chest which should have been opened more fully long ago.

In 1908 was formed, with state funds, a private organization called Selskapet til Emigrasjonens innskrenkning (The Society for the Limitation of Emigration). Its job was clear from its name. The society began by purchasing a large farm and dividing it up and by founding an agricultural school to train farmers for the future. Shortly the organization felt the national need for overall guidance of homesteading, asked for and was given this charge, and, in 1915, changed its name to Selskapet Ny Jord, the full title of which became "Society for the Country's Domestic Colonization and the Limitation of Emigration".²⁴ By 1917 its directives were:

1. To purchase fairly large areas suitable for homesteading (usually with group action in view),
2. To survey, build roads and ditches, and prepare plans for cultivation of an area,
3. To begin the cultivation of part of an area,
4. To lay out units so they would be full-time farms,
5. To provide aid in the construction of buildings, and
6. To make loans for purchase of the farm, this aid to be free of interest and installment payments for five years (or possibly seven years) and afterwards to be paid off like loans from The Small Farm and House Bank.

These general rules were drawn up after the society had had two experiences. In Namdalen it had attempted to plan for total use, build nearly everything, including the houses, and cultivate the land. In Fjotland it did the planning but built just roads and ditches. In the first area it was too much,²⁵ in the second not enough, so the six directives were a compromise. But they were major steps forward in many ways. They helped organize the settling process by specifying several directions and limits of activity and by focusing administrative responsibilities. They aimed at "self-

sufficient" farms with 100-200 decares (25-50 acres) of cultivated land each rather than the previous maximum supportable of 20-30 decares (5-7 1/2 acres). They required detailed inventories of an area's qualities and quantities. They encouraged settling in groups but left many decisions to the settlers. They included local officials in the planning and execution of the plans. And they controlled the use of state money carefully.

With respect to the selection of settlers, the "Achilles heel" of rural settling, the files of Ny Jord probably are as rich as any agency in the world. But they have not been searched specifically for guides on this point. However, the society learned early that it had to search carefully for suitable persons. These people had to be sincerely interested in a project, they had to have some money or be able to save it or be capable of getting along on small grants and loans, and they had to work hard. Society personnel found it relatively easy to find out about the men being considered and felt rather secure about selections made. But very early they determined that the female part of a new settler's family had been underestimated, or was becoming highly significant, and that it was much more difficult to determine the suitability of a woman for new settling. As a result of this experience a great deal of attention was given in this study to the women's functions and attitudes in rural settling and abandoning throughout Norden. However, it is felt that the selection of settlers is still the weakest part of new rural settling, throughout the world, and the analyses of experiences of agencies like Ny Jord and detailed psychological and sociological research on the topic are long overdue.

In general, Ny Jord has not tried to form whole communities. Planning included the use of existing local elements, such as, churches and schools. Other public and semi-public facilities have been provided if the society could not get them installed by some national or local agency first. Occasionally, in recent times, machines have been provided to cultivate the first 50-60 decares (12 1/2-15 acres) just to save labor at a time when many things had to be done at once. But most often Ny Jord has operated as a "seeding", providing just the basic initial facilities, and then encouragement and a means of bringing to gether new settlers and local officials.

Between 1912 and 1958 the society founded 65 rural settlements.²⁶ Most of them are in three concentrations: in the Vesterålen (just north of the Lofoten Islands and in the Middle Fringe Zone), on the central western coast SW of Kristiansund (in the Inner Fringe Zone), and along a line from NE of Oslo on northeastward to the Swedish border (mostly Inner Fringe Zone).²⁷ Principal founding dates were the early and late 1920s and the mid-1930s. In number of farms 54 of the settlements were designed for 1-18 holdings (of which 25 were 3-8 farms), 8 for 22-28 units, and 1 each for 36, 45, and 89 farms. Through 1966 four more settlements were added and by then 41 were considered to be essentially developed and requiring no more of the society's attention.²⁸ In the 58 years that Ny Jord has been a model for Norwegian rural settling it developed 242,463 decares (about 60,625 acres) of land by the sale of 603 farms. Though all but the first 130 of these places are included in the figures for the state's homesteading program, discussed below, it is clear that

the society's effort is unique in Norway and deserves being singled out.

General: The State Bureising (Homesteading) Program

The state's more direct participation in new rural settling began in 1920. At that time the Norwegian Storting (Parliament) passed new regulations concerning reclamation and homesteading. These went into affect in 1921 and they have formed the principal means by which food production was increased, young people were given a place in agriculture, and farm sizes were increased.

The basic rules of eligibility for aid were that a homesteader should be between 21 and 65 years of age, that he should have property valued at 1,500-15,000 Norwegian Kroner (as of valuations in the 1920s but the whole requirement was dropped later), that the land on a farm be so situated that it could be operated as a unit, and that farms aided by this program should not be sold or transferred during the first ten years after aid was given without consent of the state's Department of Agriculture (to prevent speculation). Also, the farm was to have at least 20 decares (5 acres) of arable land (of which no more than three-quarters was cultivated) and no dwelling more than two years old when aid was requested.

Until 1952 changes in the original provisions were made mostly to parallel variations in prices. But since then limits on capital and income have been dropped. In general, the aid is now given as a proportion of calculated cultivation expense (which includes drainage and first fertilization) and is paid at certain stages of the work; the percentage granted has been 20-40 and there is, of course, an upper limit of total costs. Those persons with

very little cleared land could get more help by increased grants: at first these were double the regular allowances but since 1946 they have been for 60% of the costs excepting (since 1952) the three northernmost counties where it is 80%. These grants also have upper limits in amount of cleared land which have been raised from 20 decares (acres) originally to 75 decares (about 19 acres) in 1952.

In addition to the grants, persons with small capital and low income could obtain loans from The Small Farm and House Bank. Bureisere (homesteaders) with these, as under the Ny Jord program, get the interest and installments paid for by the state during the first seven years and they are exempt from taxation for the first five years. Also, at first funds were given to help build barns and in 1935 houses were added.

Farms already in existence also could benefit from bureisere support. State grants have been made for the drainage of land already being cultivated and for the regulation of water in an area. Further, aid has been given as a proportion of the cost of constructing roads to farms. Thus, the problem of improved agriculture has been met on several fronts.

The usual procedure to become a bureiser demonstrates some of the useful checks in the program. First, a settler applies for a loan at the office of the Agricultural Committee for the minor civil division in which the applicant intends to reside. Second, the committee reviews and evaluates the man and his wife, particularly in terms of attempting to develop a self-supporting (full-time)

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Farms already in existence also could benefit from bureisere support. State grants have been made for the drainage of land already being cultivated and for the regulation of water in an area. Further, aid has been given as a proportion of the cost of constructing roads to farms. Thus, the problem of improved agriculture has been met on several fronts.

The usual procedure to become a bureiser demonstrates some of the useful checks in the program. First, a settler applies for a loan at the office of the Agricultural Committee for the minor civil division in which the applicant intends to reside. Second, the committee reviews and evaluates the man and his wife, particularly in terms of attempting to develop a self-supporting (full-time)

farm. Third, the applicant contacts the Herredsaagronom (district agronomist) to select a plan for the house and to make a plan for developing the farm. Fourth, the application papers and tentative plans are forwarded to The Small Farm and House Bank; most bureisere operate with a loan, a state grant, and private funds and the administration of the minor civil division involved is required to underwrite the loan. Fifth, if the loan application is approved by the bank the papers are returned to the local committee and are then forwarded through the county agricultural society (which rechecks the application) to the state Department of Agriculture; at this point the detailed plan for the farm is sent in. If the plan is accepted the application is approved and most of the papers are returned to the local committee.

Thereupon house building and clearing begin. But especially the former because the homesteader gets a quarter of the money right away if house construction is undertaken and another quarter at the half-constructed point (after inspection by the county society). As building and clearing proceed funds are provided at certain stages and the state Department of Agriculture keeps some track of developments. But after four years a bureiser is administered entirely through local officials.

Between 1921 and 1936 more than 11,300 farms were aided under the state bureisere program. Curiosity about its effectiveness prompted an official survey of this first 15 years but the war eclipsed its release in 1941.²⁹ Selected principal points related directly

to the objectives of this study were: northern Norway had the largest percentage of cultivated land and homesteaders, there was little land suitable for homesteading in the more favorable agricultural parts of the country, about one-half of the farms were within 2 km. (1 mile) of the nearest railroad station or bus or boat stop as well as the nearest trade center (but 16% had no farm road at all), of the newly cultivated acreage only 13% was in new farms and 87% was expansion at older farms, the average size of established farms increased from 137 decares (about 34 acres) in 1921-1925 to 209 decares (about 52 acres) in 1934-1936, clearing of 15-20 decares (4-5 acres) went rapidly but thereafter clearing went slowly, cultivation often went no further than was necessary for the subsistence of the homesteader's family, about four-fifths of the bureisere were married, nearly 70% were between 30 and 50 years of age, a homesteader's family was a farm's labor force, about 80% of the settlers had supplementary work which was usually in forestry or fishing, more than 86% of the bureisere had grown up in the minor civil division where they settled and another 10% had moved only within a county, water was in 23% of the dwellings and 25% of the barns, about a quarter of the residences had electricity, and state subsidies per farm averaged about 3,000 NK. All this pointed to the conclusion that homestead farms were essentially subsidiary to other types of income. However, it must be remembered that in the 1930s the program was very much a social action to help people through the economic depression.

Weaknesses in the program resulted in some failures. The

causes recognized were: instances of too rapid settling, poor location or low agricultural quality of some farms, inadequate experience of some settlers, higher income possibilities in non-farm work, a settler's lack of personal capital, and sickness.

In 1954 the excellent Borgedal report was published. This noted, among other things, that by 1948 some 16,400 bureisere had been subsidized (though by 1954 about 17% of the total had had their grants cancelled after approval of applications³⁰), about 5000 km. (3105 miles) of roads to homesteads had been built, and approximately 1,900,000 decares (475,000 acres) had been cleared and another 850,000 decares (212,000 acres) of previously cultivated land drained. His analyses of increased earnings and greater availability of food units in relation to the cost of the program to the nation led to the conclusion that the annual gain to Norway was substantial. More specifically, Borgedal pointed out that homesteading still depended greatly on the possibilities of work to supplement farm income and on marketing conditions; where marketing was difficult and off-farm work was available the clearing of land stopped when the point of self-sufficiency was reached.

The state bureisere program was most significant in the 1920s and early 1930s. Between 1921 and 1925 about 257 farms a year were aided and the number increased steadily to a high of 1804 in 1936 (right after loans for all residences became approvable and shortly after people who were predominantly fishermen became eligible for such aid). Thereafter annual totals declined to 1180 in 1939, to an average 230 between 1946 and 1949, to an average 59

between 1956 and 1963.³¹ By the end of 1963 a total of 18,470 bureisere had been approved in 43 years of activity.³² But the overall significance was that between 1921 and 1948 about 16% of Norway's population increase was at least partly, though usually not completely, absorbed by the state bureisere program.

In several parts of the country the program was especially significant locally. In the southern half of Norway, for example, 14 herreder had more than 20% of their farms in 1941 occupied by bureisere (about evenly split between the IFZ and MFZ) while in northern Norway there were 24 such (with somewhat more in the MFZ than the OFZ).³³ In total numbers per herred through 1963 the higher ones, by far, in the south were in the Inner Fringe Zone where Trysil (a sample district; see below) had the maximum of 270 homesteaders in comparison to a usual 20 to about 60. In northern Norway these totals were larger, often from 50 to 100 and more with the three sample districts being: Hattfjelldal 181, Målselv 235, and Sør Varanger (Pasvikdal) 159.

The total effect of the state bureising program to the present time has been truly significant geographically, socially, and economically in positive senses. But some of its lasting effects may now be in jeopardy. In Norway's rural areas which have higher degrees of isolation the great percentage of residents in the older age groups and the absence of younger people reminds an observer of areas in Sweden where retreating is in force. Many such areas in Norway were settled as a result of bureisere.

support. For some abandoning appears inevitable; how soon it will occur depends upon national and local desires.

General: Reclamation of Bogs

Both the state and Ny Jord programs have gotten considerable aid, sometimes indirect, from another source. This is Det Norske Myrsekap, The Norwegian Bog Association. It is a semi-public organization, very active since the early 1930s, whose task has been to sponsor the proper use of Norwegian bogs and peat. The association is composed of citizen members but the state provides grants for its research.

That the society had a large and complex objective is seen readily. The state's policy has been to encourage the production of food for people and animals and to make farming as attractive as other occupations.³⁴ With less than 3 % of the country being farmed and so much of it in mountains it was recognized in the early 1930s that bogs needed to be studied. But they totalled about 3 million hectares (7 1/2 million acres) and in an area of former mountain and continental glaciation the swamps were found in all sizes and shapes, at widely varying elevations, and with considerable range in physical properties. So the society began an inventory in 1934 under the able leadership of its director, Dr. Aasulv Løddesøl.³⁵ Field work has been done at scales of 1/10,000 to 1/50,000 during which the bogs have been classified according to predominant vegetation, degree of humification of peat, and other physical properties making possible estimates of the possibilities of draining and utilizing them. This research has been carried on throughout Norway

in upwards of 8% of its bog land.

Results of the Bog Association's efforts have been both significant and surprising. Multiple use by stages has been proposed for and carried out at some localities where industrial usage of the peat (for as long as 20 years) has preceded incorporation of the bog into local agricultural production. Elsewhere large areas have been drained by a variety of relatively inexpensive methods³⁶; it is still somewhat startling to some observers to see cattle grazing in areas which were open swamps three or four years previously. In only a few countries outside of Norway, of which Newfoundland is one, have the experiences of Det Norske Myreselskap been applied. The potential results from using its measures in Nornam are undoubtedly well worth considerable testing there as soon as possible.

The Trysil District: IFZ Sample

Trysil District is in southeastern Norway, in the northern part of the Inner Fringe Zone where it touches the Swedish border (Fig. 7-1). This puts it on the western lower slopes of The Keel Mountains in an area of stony morainic soils, irregularly distributed swamps, and a thick cover of predominantly Scotch pine. The district is a part of Hedmark Fylke (County) which was described and analyzed rather thoroughly in 1955.³⁷

Modern settling of the district got its real start in the late 18th and 19th centuries and many of the early settlers were Finns who came by way of Sweden. But the significance of the Trysil District in this study is the combination of its Inner Fringe

Zone location in inland Norway, the large number of bureisere there, the concentration of Ny Jord colonies, a predominant occupation of farming-forestry, and a low-middle income per capita.³⁸ In addition, it has experienced a slow but steady decline of population in recent years, dropping from 8455 people in 1950 to 7631 in 1965.

The start and the rates of growth and decline of the bureisere program in Trysil District were representative of much of southern Norway. But the number of homesteaders was the greatest for any herred in that part of the country (the district's area is one of the greater there also). The first support was given to one applicant in 1922, the numbers rose to 18 grants in 1930, and remained about there, through a maximum of 25 in 1936, until 1941. From 1942 through 1944 there were 5-15 a year, in 1945 and 1946 only one each, and from 1947 through 1952 there were 5-10 new bureisere a year. After that the numbers dwindled to one or two a year and since 1960 there has been none. These changes reflect the early desire to provide farms for people as a social benefit, then the big need for aid during the depression years, a continued need during the war period of the early 1940s, and the desire of young married people to get on to farms in the post-war era. But more recently the trend has been for the young, unmarried people in the district to move out with the increased opportunities for work in the cities and in rural industry elsewhere.

Many of the bureisere opened new farms in the district. Certainly the percentage of freshly broken places (the "cold farm" of Finland) was much higher than the average of 13% for the country

although the specific figure is not known. Several of them were formerly the seter (summertime hill pasture) type or were new clearings at somewhat higher than average elevations (630-690 meters above sea level, or 2067-2264 feet) because the lower land, along the southeastward-flowing river that splits the district in half, had all ready been taken.

The bureisere were scattered all over the district by 1939.³⁹ Most were single farms but several groups (clusters?) of three to six farms were noted in 1943.⁴⁰ As more of these were introduced county officials felt the need for a survey and instituted one in 1950.⁴¹ Items of immediate interest in the report on that survey were: bureisere farms were small (averaging 93 decare or 23 acres), most of them were new farms, for only half was there room for expansion, houses were small and poor (as a direct result of war-induced restrictions and difficulties of procurement of materials), 32.5% of the farms contributed little or nothing to the families' support, the most difficult period of homesteading was the beginning, some of the land and some of the people selected were unsuitable, the larger the family at the start the more likely the farmer would have to perform off-farm work (71% of the bureisere in Hedmark worked off their farms at least part-time), building costs were about 10,000 NK per barn and 5000 NK per dwelling, cultivation costs were about 500 NK (about \$69.25 USA in 1955) per decare (1/4 acre), and state support had been about 4810 NK (c\$670 USA in 1955) per farm.

The report's major conclusions were that the homesteading ought to have given a somewhat better result⁴², that the state

should do more developing of a farm (i.e., build the dwelling and clear 25 decares of land) before selling it to a bureiser, that homesteading took too much time, and that there was room for more in the county. Yet, many articles have been written about the county in the vein that a living can not be made from farming or that the forest-farm income to be expected there is about 10 to 1. And now there is a declining and aging population in the district.

An interesting exception in the bureising program was the group settling of Muruåsen. This area, near the northwestern corner of the district had seven homesteaders arrive in 1948. At each of the seven the state cleared 25 of the 280 decare (6 1/4 of the 70 acres) and paid for most or all of the work (using local, privately-owned clearing equipment). Electricity was brought in about 1950 and telephone lines were strung later; almost all farms had electricity but only a few telephones by 1958. The water supply at some of the farms was problematic due to high iron content. Of considerable importance was the fact that in the beginning there was much cooperation between homesteaders. An eighth farmer started in 1952 in the same area and soon was working very closely with the others, especially with respect to draining and clearing. Once everyone had a good start there was a noticeable decline in the cooperative efforts but it is recognized by each settler now that the ability to work together is present.

The five Ny Jord settlements cover a variety of settling cir-

cumstances. Founded over a span of 18 years they range in size from 6 to 29 farms and covered all stages of completion in 1958 (Fig. 7-5). But most of the farms have been newly created so each

Figure 7-5

Ny Jord Settlements, Trysil District, 1958⁴³

Name	Date Founded	Total Farms	Newly Created Farms	Residences Built	Farms for Sale	Size (Decare)
Osskogen	1934	6	2	2	0	3200
Rysjølia	1936-37	18	18	16	0	6132
Gronåsen and Gjetsjøberget	1936-38	29	22	15	3	8470
Formoteigen	1942	5	5	0	4	1483
Toråslia	1952	10	10	0	10	7047

settlement represents a spot of advance in the pattern of settlement.

The two larger ones demonstrate the time necessary for development. Rysjølia was a completely new settlement, in the extreme southern part of the district, started in 1939 when two houses were built. By 1941 there were three but most of the remaining farms could not be started until after World War II. In 1952-53 Ny Jord began to use machinery more and by 1958 about 210 decare (52 1/2 acres) were cleared there. The settlers were not paid for their work in the clearing and draining. In 1958 draining of lower fields was still in progress and the land was being limed for seeding to grass. A poor first crop but a usable second one was expected on the land drained during the previous year. In 1957 electrical service was available but not until 1959 did telephone lines reach the area and only since about 1962 could it be approached by road from

the east as well as the west. By 1958 16 houses had been built, accompanied by 13 rather small barns, but the general feeling was that the southwest-facing slopes were too steep at the eastern-most three farms for completion of the farms there to be expected. The income at all of these farms was largely from the forests and the state figured it got its grants back from the sale of the wood; about 8500 NK (\$1185 USA) were given at each place, the total state cost was about 10,000-12,000 NK (\$1394-1672 USA) per farm, and individual farmers borrowed about 20,000 NK (\$2788 USA) each.

Gronåsen and Gjetsjøberget, the largest Ny Jord settlement in Trysil, was started in 1936. It is in the south central part of the district. The bridge and road into it were begun in 1938 and there, too, settling was delayed by the war. But by 1958 only three farms remained to be sold, settlers were developing different ways of removing the boulders from the morainic soils (at costs of 2000-35000 NK per hectare or about \$111-195 USA per acre), some farms had as much as 10 hectares (25 acres) of cleared land, potatoes were being raised successfully, and daily milk pickups were being made for hauling to the Nybergsund dairy. Additional land was being cleared and some of the farmers were near the end of the first stage of settling so were considering improvement of land all ready cleared or buildings all ready erected.

While settling by the state supported bureisere and the Ny Jord people was going on other developing in Trysil District supported it. Road construction was one. In numbers of meters built per

year it was: 15,300 in 1929, 6,523 in 1934, 14,987 in 1937, 5,945 in 1938, and less than 20 annually since.⁴⁴ Thus, by 1938 this road building program provided the primary and secondary access network as it exists at the present time⁴⁵; though several points throughout the district are 5-10 km. (3-6 miles) from the nearest road most dwellings are much closer.

Erection of electrical lines began about the time extensive road construction was ending. A power plant established in 1938 at Sagnfossen, in the southern center of the district, opened the way for local power distribution. This proceeded immediately along most of the primary roads and to the principal villages on secondary roads.⁴⁶ Since the war several extensions have been pushed into areas with higher degrees of local isolation, in spite of the fact that some farms in those localities had their own private generating facilities.

Telephone lines were installed even more recently and in a much coarser distribution pattern than roads and electric lines. The telephonic trunk route was put in along the principal N-S road from Trysil Village southward in 1943 and in 1944 eastward to beyond the village of Østby. In 1947 another line went southwestward from Trysil and in 1950 the district's easternmost valley was tied in. By 1955 the main line was run northward from Trysil Village with a side line up Flendalen in 1956. Otherwise only short extensions have been built north of Østby in 1957 and to Rysjølia in 1959. However, the recency of this construction program was of little significance to the new settlers because individual phone

service is considered expensive and many farms are still without it.

The recent population trend was noted above to be one of decline and one of increasing age of the people on farms. Figures support the former and visual observations the latter. The decline in numbers is representative of areas with moderate to high degrees of local isolation throughout Norway (but not of most areas with the same degrees of regional isolation). The reason is that younger people are going to more accessible places by a series of short moves like those described for Sweden. Many of those moving are unmarried men and women in the late teens so married older folk are left behind.

This movement means, too, that there are spots of abandoning. Actually there are more with respect to farming than is apparent at first. Many a bureiser farm was noted to have been a seter previously, a seasonally-occupied higher-elevation pasturage area. These were not better agricultural lands usually and had higher degrees of isolation than older farms nearer the villages. So the movement out of young people left older ones in more isolated situations and with increased age they have left the farms for institutional living or a cemetery. But because of the extension of roads or electrical or telephonic lines abandonment often did not follow; rather the place became a privately-owned summer-or winter-time recreational hut. This change is in keeping with the well-known decline of the seter in numbers and in importance during at least the past 20 years.⁴⁷ Increased industrialization and trade as well as increased mobility of individual Norwegians is likely to emphasize the declining trend in the years ahead.

The Målselv Area: MFZ/OFZ Sample

The Målselv Area is in northern Norway, near both the coast and the northern end of the Middle Fringe Zone (Fig. 7-1). However, the area extends so far inland as to be partly in the Outer Fringe Zone also. Administratively it is the Målselv District and adjacent areas in the southwestern center of Troms Fylke (County), an area analyzed economically and described historically in the mid-1950s.⁴⁸

Though the very earliest settlers near the north Norwegian coast are lost in early history, the first modern Norwegian settling of the Målselv District commenced in the 1780s.⁴⁹ These were people from the two major valleys of southeastern Norway, farming districts where there were big floods in 1770. That they were clover farm and woods people is certified by the continuous occupying of many holdings in the five valleys comprising the settled parts of the example to sample area. but its importance here is in the association of being a high-latitude (69°N.) position, astride a zonal boundary usually characterized by little or no recent settling (or by abandoning), an area of one of the larger numbers of bureisere in northern Norway, where there are two Ny Jord colonies and a nearby bureisere group settling experiment, a predominant occupation of farming (dairy) with supplementation by off-farm construction work or hunting or fishing, a group of people with low income, and an area of continuing settling.

The growth and decline of bureisere in the area is roughly representative of the districts in Troms County which had larger num-

bers of homesteaders. The first were five farms approved in 1922 and annual additions were about that until 1931. Then the figure went to 14 and remained about the same through 1936 when it went to the maximum of 21-23 per year for 1936-1938. Thereafter it plummeted to 3 in 1940 and remained insignificant through the war years. Since 1944 a total of 19 homesteading grants have been made in seven different years with the last being two in 1957 and one in 1962. Yet, throughout the Målselv area not only was no abandonment observable through 1964 but many new dwellings were evident; certainly some were reminders of reconstruction of places destroyed during the war but this must not have been more than a quarter of the newer buildings present.

These homesteaders were scattered all over the area. To determine reactions to and recommendations concerning the bureisere program there, the owners (often the resident woman as well as the man) of 25 farms were interviewed in 1958 for this study; these were concentrated in the more nearly full-time agricultural parts of Målselv District itself. In addition six local officials were interrogated in 1958 and in 1964 most of the farms, plus several tens of others, were observed. A summary of the comments emphasizes the significance of the measures of isolation adopted for this study (Chapter 4) and points the way to some of the recommendations.

Most of the new farms were formed by splitting off pieces of existing farms (a practice discouraged by a national law passed in 1955) so the bureisere were close to other settlers in at least two directions. Farmsteads were placed on either existing roads or

those newly built by the state for the purpose; everyone volunteered comments on the indispensability of good roads (especially to the marketing of fresh milk produced on so many of the places). Agreement was general on the need for a telephone at each farm but that the state service was often too expensive compared to the average low income; this was solved in at least two sub-areas by local cooperatively-established phone lines between the residences. There was complete agreement that most of the farms were too small; averages of 300-400 decare (75-100 acres) under a program aimed at full-time and mechanized farming⁵⁰ produced impossible situations, especially where the cultivation limit is about 300 feet above sea level. Electricity was not considered so essential in the late 1920s and 1930s but now it is and often by those who thought it not so earlier (lines were brought in to several of the valleys between 1960 and 1962).

In timing of settling activities there was general agreement that clearing should be done first and often that barn building should be the second action; this reflected the requirements of cattle raising as well as the possibility of living in a barn or a temporary house at first. Usually the house was built as small as possible in order to save money and because many of the houses were constructed without state support. With this background it is no surprise to learn that many of the homesteaders felt the state should do more clearing, draining, and erection of buildings than was done, a reflection of the pressures felt in the early stages of homesteading; yet, local officials warned against doing too much for financial and

psychological reasons.

Reactions concerning the selection of settlers showed agreement between homesteaders and officials. Most of the former moved only within a district or to adjoining districts and favored settlers having local knowledge but one official called for the reverse to encourage the introduction of new ideas. And at the same time most homesteaders insisted it would be best to have agricultural school training before homesteading. Meanwhile most interviewees agreed that the settlers approved ought to be in their low 30s, married, in good health, with some money, experienced in farming and with great interest in farming in the area, willing to work hard and long, and that the wife's attitude and ability were very critical to a family's ability to stay.

The bureisere experiment in group settling is northwest of Målselv in the eastern central part of Senja Island. This is Grasmyrfelt, a state-planned operation on land purchased from individuals and which has been active since 1953 (though laid out much earlier). The experiment was begun to create an example for the improvement of local farms and depended first upon considerable draining and road building by the state. By 1964 the prøvebruk (exemplary farm) and six others were being developed according to a detailed plan for a total of 34 farms to be grouped closely. But recent interest in the settlement has been low because farm work is considered hard and results too few as a result of agriculture there being limited primarily to potatoes and hay even after all the draining work. Of course, few applicants might have been expected because the planned farm sizes average about 220 decares (55 acres).⁵¹

The other group settling efforts in the Målselv area have been two Ny Jord colonies. These are off the west side of the mouth of Målselva (The Mål River) in drained swampy areas. The older, to the west and called Fugelmo, was started in 1926-1927 to create five new farms about 200 decares (50 acres) each; work is completed there and in 1958 some 189 decares (47 acres) were cleared.⁵² The newer place, Homen, was started in 1935 with space for 9 farms, also about 200 decares each and by 1958 there were 182 decares (45 acres) cleared and only one farm was left open for purchase. Here again, as at Grasmyrfelt, farms are so small that it is clear that much of a settler's income was expected to come from off-farm work, most likely fishing in this part of the area.

All of the bureisere program in the Målselv area received extra impetus from the North Norway Development Program.⁵⁴ Under this the war damage was cleaned up, the improvement and extension of transport routes took place⁵⁵, industrial development was fostered, electric and telephone lines were put in, and local markets for local foodstuff expanded.⁵⁶ All this was accompanied by a slow but steady growth of population in spite of the rural-urban trends; in Målselv District, for example, the 1950 population of 5079 was by 1963 up to 5572 and by 1965 even higher to 7067.⁵⁷ This is especially significant because the district includes only a few villages and it probably experienced no extra stimulation excepting a possible slight one from the military activity around Bardufoss airport, about 12 km. (7 miles) southwest of Moen village. It is this growth which explains the absence of abandonment and which makes this part of the

Middle-Outer Fringe Zone out of the ordinary. For it the state may take a good share of the credit, though the cost has been great.

The Hattfjelldal Area: OFZ/MFZ Sample

Hattfjelldal is a small village at about the geographical middle of Norway (Fig. 7-1). It is the center for an administrative district with the same name but herein the area includes that and a part of the herred on the west. All of this is an inland part of the southern section of Nordland County, considered by local people as the beginning of Northern Norway.⁵⁷ This qualified the area for special aid for settling after World War. II. Also, the location is one within the Keel Mountains where settlement is concentrated in the forested floors of six valleys whose pattern is that of an I and E connected across the top.

Norwegian settling of the area began in about 1680.⁵⁸ By 1742 there were four inhabited places with 10 farms in Hattfjelldal district and two more farms in Fiplingdal, the valley of the western part of the area. Through the rest of the 18th century settling was slow and much was the seter type. In the 1800s settling continued to be slow, in part because of a big fire in the 1830s and in part because a large section of the area was owned by an English firm, interested only in the timber there, between 1866 and 1899. Yet, most of the present-day farmed areas originated in places started in the 1800s, particularly after 1850. However, the significance of the Hattfjelldal area to this study is the combination of its being mostly in the Outer Fringe Zone, in an inland high-latitude position (c66°N.), where there have been so many bureiser

that it is the highest percentage in all Norway, where some of the farming approaches full-time farming and other is farming-for-estry, where group settling has been carried out with state-supported homesteading, and where recent numbers of people have remained stable.

The variation in numbers of bureiser in Hattfjelldal district is rather representative of all Norway inasmuch as there were so many. The first applicant was approved in 1922 and there were a few each year until 1929. Then there were 16 and annual figures ranged thereafter from 6 to a maximum of 19 in 1934. Through the rest of the 1930s there were about 8 per year. In 1941 and 1942 there was none but from 1943 to 1946 as many as 10 per year. After that 2 or 3 was an average annual figure for some years until 1958 when, as for all of Norway, the program for homesteading began to taper off, and for this part of the country meant no bureisere at all through 1966.

The unusual feature about the Hattfjelldal area is that it is one where there has been recent local advance of settling. This was in spite of its position in the Outer Fringe Zone and in spite of Nazi occupation during World War II. In part this is due to much settling being delayed until a time when state support was available. In part it was because the Nazis built an airport near Hattfjelldal village and tried to win local support by careful control rather than ruthless rule (and so there was relatively little destruction in the area). And in part it may be due to the woodworking plant set up in the village since the war. To provide bases for under-

standing these circumstances 53 interviews of selected local persons were carried out in 1958. The summaries are divided between that for the district and that for the state group settlement in Fiplingdal, the western part of the area.

Many of the comments of settlers in the district are similar to those heard elsewhere in Norway. In general they favored the homesteading program and were pleased with the attention and advice given by the state but there was disagreement as to whether enough financial aid was available for either buildings or clearing (especially where the latter was done in stony areas). Most of the newer farms were formed by the purchase or grant of part of an existing farm⁵⁹; the farms were too small from the beginning, being perhaps 400 decares (100 acres) with 60 decares (15 acres) cleared and supporting 3-5 cows. Most of the farmsteads now are accessible by a seasonal road but several were not on such when started as most of the area's roads were opened in the latter part of the 1920-1952 period. Most of the bureiser were in their late 20s or early 30s when they went to the area, were married, and came from nearby valleys; both wives and husbands who did not were easily recognizable during interviewing by comments on the isolation and their desire to move. The high degree of local isolation and the amount of work required of the woman on the farm emphasized the essential nature of her contribution to permanence in this area more than in either the Trysil or Målselv areas. Commonly female interviewees stressed the desirability of telephonic communication early in the settling process but almost all the home-

steads had to begin without either telephones or electricity; at several places neither was available even 10 years after the starting time. And most places received mail only three times a week when the roads were passable.

Some non-agricultural work characterized most of the homesteaders. It was common to find half the annual income of a family came from forest work, wood sales, or off-farm employment. A significant part of this centered on the wood processing plant at Hattfjelldal village. This factory, which began production in October 1957, was located there to use the hangar at the Nazi-built airfield, to be close to a source of birch which predominated after the spruce was taken out by the English timber firm, to take advantage of aid from the North Norway Development Program funding, and to use the good local labor supply (because the farms were small). By the end of the first year of production, which was quite successful, 43 farmers were employed, some of who indicated the work to be much easier than the usual farming-forestry of the area. The stimulation of such a plant on the economy of an area with such degrees of isolation as Hattfjelldal is worthy of continued and penetrating study.

In the timing of settling actions almost all the homesteaders began with their houses, usually the permanent type, and proceeded to the barns and then to clearing. One modification was making the barn only temporary in order to get to clearing at least in the second season and a further departure was first clearing a small bit of land, perhaps 4-6 decares (1-1 1/2 acres),

and then erecting permanent buildings in the usual order. This succession depended, of course, on the amount of money, machinery, and experience a homesteader had; most had enough of the last, too few had the first two in sufficient amounts.

Most of the settling of Fiplingdal was different. There 21 farms, at least seven of which were completely new, were introduced on state-owned land. Some 16 began in 1943, a difficult time. Settlers were selected by the usual process (approval of application for loan) but as a state-sponsored operation more roads, major ditches, and clearing were available than for homesteaders settling separately. There, too, over half of the farms were made larger than those in Hattfjelldal, some being upwards of 600 decares (150 acres). By the fall of 1957 a total of 468 decares (117 acres) of land was cleared in the valley; at 5 farms no land was cleared and at 9 others less than 5 decares (1 1/4 acres); all homes but three and all barns but five were completed.⁶⁰

As usual in the bureisere program, district and county agronomists were major elements in the settling of Fiplingdal. They governed much of the state's part and provided advice on all phases to the settlers, especially concerning the siting of houses, barns, and fields. In general, the 19 families interviewed in the valley had favorable reactions to the aid given with any possible exceptions usually being persons who were not originally from the local area. But a major additional strong point was the presence of an exemplary farmer. This man was a homesteader but one who had had special college-level agricultural training.

To him the local agronomists brought the newest ideas and the application of them by one of their own numbers was most effective on the bureiser in the valley. This is a technique that can bear repetition wherever possible in the world.

In total the Hattfjelldal area's moderate to high local and regional isolation have been conquered. It took the will of its settlers, good fortune during wartime, industrial ingenuity, and the state's encouragement. The result is evident. One was in recent population numbers remaining stable; between the beginnings of 1963 and 1965 the 2110 people changed to the equivalent of 2116.⁶¹ In another way, roads have been improved and a new one built in the mid-1960s eastward up Skarmodalen to the Swedish border. But clearest is the absence of any areas of abandoning and, in fact, of single unoccupied places. Of course, the normal life and death of a rural landscape means there will be a few places that appear run down and little used because of advanced age, illness, accidents, or disinterest of the owners -- the Hattfjelldal area has its share of these but there are no indications that the numbers are abnormal nor that abandoning is likely to be localized in the anticipatable future. So the area is unusual -- it has had significant recent local advance of settling, is at least stable now, and is at least partly in the OFZ. But it is not the only such area in the country.

The Pasvik Valley Area: OFZ/OMFZ Sample

Pasvikdalen (The Pasvik Valley) is at the extreme northeastern corner of Norway and is a finger of Outer Fringe Zone extending southward from the city of Kirkenes (Fig. 7-1). It is the Nor-

wegian, or western side, of the lowland of the north-flowing Pasvik River, the boundary between Norway and the Soviet Union. But it is only a part of the Sør-Varanger District which includes coastal and inland parts quite unlike the valley in rural settlement form and rural settling process.⁶²

Modern Norwegian settling of the Pasvik Valley began about the middle of the 19th century.⁶³ In 1801 the 163 Lapps in Sør-Varanger made up most of the population with some 31 Norwegians also reported. Only Lapp growth was noted until 1845 when of a total of 690 people, 416 were Lapps, 78 Norwegians, and 75 were Finnish. But in the next 20 years the population nearly doubled with the Lapps increasing to 667, the Norwegians to 194, and the Finns to 339; by then, too, there were 39 who were mixtures of Lapp and Nordenic blood. In 1900 further growth in the district was reported with the sum of 1912 people being made up of 698 Lapps, 396 Norwegians, and 818 Finns. The increase of the Finnish element was significant, these people had shorter trips and less adjustment than the Norwegians who were encouraged, especially in the 1890s, to come from the eastern valleys of southern Norway. However, this changed.

In the late 1860s a taconite-type iron ore was discovered south of the present site of Kirkenes city. In 1906 a company was formed to mine the ore, construction of the facilities to concentrate and move the ore began in 1907, and processing began in 1910.⁶⁴ By 1910 the population of the herred was 3320 and by 1920 had increased to 4798. Then came the bureisere program under which most of the settling of the Pasvik Valley area took place, giving it a special significance.

To this study the Pasvik Valley is of particular importance, similar to but greater than that of the Hattfjelldal area. Rural settling in the Pasvik shows what can be done if a national government wants and encourages developing in spite of odds against it. The Valley has the highest degrees of regional and local isolation of any of the sample areas of Nordenic growth presented herein. Its latitude alone is nearly 70°N., no movement eastward is possible, and the one road dead-ends about 120 km. (75 miles) southwest of Kirkenes. Much of the area's settlement was destroyed during World War II (and even some is being so now). But in spite of these the numbers of homesteaders through 1966 increased continually to one of the higher totals in all northern Norway, these bureiser are farmer-foresters, the area is one of relatively high income per person, and in population it has continued to grow through 1965. This is, indeed, a rare combination.⁶⁵

In Finnmark county the bureisere program of Sør-Varanger district was the most continuous in additions to the present time and it was one of the more regular in numbers added as well as one of the greater in total persons settling with state aid. The beginning was in 1922 when 7 homesteaders were approved. Starting in 1925 there were annual additions for 17 years; they were about 6-8 a year in the late 1920s and mid-1930s and rose to a maximum of 10-16 per annum in 1937-1939. During the destruction and reconstruction of 1942-1948 there were only 2 homesteaders (in 1944). But thereafter only three single years had none through 1964, and from 1950 through 1955 there were 32 new bureiser of which 10 started in 1954. And,

while the program was rapidly decreasing throughout Norway in the 1960s the district had 7 new homesteaders in 1963 and 1964. Thus, by the end of 1966 162 farms had been started by bureiser.

An overwhelming majority of these was in the Pasvik Valley area. Elsewhere in Sør-Varanger there were eight areas organized for new state-sponsored rural settling; five were started after 1950, none had more than 4 farms by 1958, and only three were planned to have more than 20 farms each when completed. But the Valley was different. Downstream from Svanvik village were older farms, upstream (southward) was the big state area. This was started about 1930 and administered directly by the agricultural department in Oslo (by way of two local officials). The land involved is that from the end of Langfjorden on southwestward through Svanvik about 65 km. (40 miles) to the Finnish border and is the settled section on either side of the road. The plan was to have 130 farms of about 200-300 decares (57-75 acres) each as well as space for more. Land prices were low, subsidies were somewhat more easily obtained than elsewhere, transport and machinery were made available to settlers at low prices, a portable saw was available cheaply, a demonstration farm was set up in the area, and roads and main drainage ditches were installed. All these were to attract Norwegian settlers, particularly in the late 1920s and early 1930s, so as to counter Finland's announced program of growth in the north; the more rapid increase of Finns than Norwegians in the area prior to 1920, as noted previously, prompted this concern and spurred the formation of this state area shortly after the bureisere program began.

The early interest in this state area was great. However, many of the people who came in the 1930s were adventurers and were not accepted. By 1958 there were more than 60 farms in this part of the Valley and about half were completed according to the original plan. Considering that destruction during Nazi occupation was 80-100 per cent in the Valley (including bridges, utility poles, and churches as well as farmsteads and cities⁶⁶) the program has been strong; this was easily observable in 1956 and 1964 by land being cleared and farmsteads under construction along the road. And all this in spite of the development's great geographic weakness of settlement being too scattered and along a single dead-end road.

Road building has been essential to all activity in the area. Around Kirkenes and from the southern end of Langfjorden to Svanvik roads were put in about 1870. Between 1919 and 1929 the main road from the ore quarries at Bjørnevåtn to Svanvik was built to eliminate water travel via the fjord or the river to get to the village. Then between 1931 and 1940 the present road route southward was developed. The most recent significant addition was the completion of a second road from Svanvik southward which runs next to the river and joins the older route about 10 km. (6 mi.) southwest of the village. Inasmuch as the river is unsuitable as a transport route the only circulation line in the Pasvik area is the road. This is one lane wide, with passing points, has a surface of gravel, and, unfortunately, is closed at some times.⁶⁷ Even if the proposal to connect a road across northern Finland to it is realized the route will remain a local one.

The explanations of the local advance of settling involves direct and indirect relationships with other elements of the Valley's landscape. The continual increase in production of iron ore at Kirkenes⁶⁸ is an example. In the 1920s some of the miners tried to be homesteaders as well; it did not work and by 1958 there was no farming-mining combination. Yet, the miners and the workers in the plant at Kirkenes provide markets of real value to the farmers in the Valley.

Related to the increasing production of iron ore is a second example, the hydroelectric development of the Pasvik River. This began in 1958 when the Norwegian and Soviet governments agreed to mutual use of the river for generation of much-needed electricity. The river was divided into three parts for different uses: the upper (southern) boundary section for the Soviet mine and plant at Nikkeli, the central portion at Skogfoss for Norwegian use, and the Boris Gleb part still farther north for Soviet purposes. It is that at Skogfoss which is significant here.

The falls of Skogfoss are about 42 km. (26 mi.) southwest of the city of Kirkenes. This location, near the exact middle of the Norwegian boundary on the river, is 16 km. (10 mi.) southwest of Svanvik village and, therefore, well within the state settling area previously discussed. The falls, like most on the river, were low being about 10 meters (33 ft.) before the dam was built. At that point the flowage capacity was known to fluctuate between 120 cubic meters (4,238 cu. ft.) per second and 200 (7,063 cu. ft.) and at flood stage to reach as much as 500 (17,657 cu. ft.). To increase

the amount of fall to 20 meters (66 ft.) and to develop a water storage area a 3/4-concrete-and-1/4-earth dam was built across the river at a point 300 meters (984 ft.) wide. This formed a lake about 40 km. (25 mi.) long and 1 km. (0.6 mi.) wide. All this was planned to be done in two years, it was, and by early 1965 work was completed and the generators were working.

As a result the concentrating plant in Kirkenes got more electricity and could increase production, so there were more workers and a bigger market for Valley farmers' products. Too, half the increase in power was for the area's residents and the cost per unit to them was reduced. So more heat, light, and people plus reduced costs of an essential were elements of encouragement to settling.

But there were losses, too. Namely, ten farms. These were on their way under water in 1964 (and at some points the road had to be moved, too). The farmers displaced were offered new places with cultivated land; in 1958 the ten were discouraged and only one planned to accept the offer while the rest wanted total reimbursement in cash. For some the loss of a farm was tragic as no amount of repayment seemed sufficient for years of inconvenient living and hard work.

This damage is what has occurred in several places in northern Sweden (Chap. 6). However, much of the forced movement there was in Outer Fringe Zone areas where abandoning was in progress. In the Pasvik Valley it has been largely the reverse. There has been little or no abandoning other than the 10 flooded out. On the contrary, the appearance is one of a viable area which will absorb the loss

and which has profited from the opportunity to work at construction so as to be able to invest more in the farms.

The viability is displayed in part by the Sør-Varanger district population figures. By 1930 there was a 10-year growth of more than 75% to 7590 people; in 1946, even after all the war-induced losses, it was up to 7993. By 1950 another 1000 people were there, in 1958 the total was 9,767, and between 1963 and 1965 it grew by 121 to 10,506. Of course, much growth has taken place in Kirkenes where the city which was levelled by bombing in the early 1940s was replanned, reconstructed, and now has more than 5,000 inhabitants. So much of this has been supported by the rebuilding and growth of the iron ore industry. But with more ore being discovered, a growth in the number of tourists coming to this northern end of "Hurtigruten" (the express route) or by all-year air service, the generation of more electricity, and reflections of strong feelings of nationalism by governmental sponsorship of growth along this border, a stable to locally advancing Outer Fringe Zone may be expected here for some time to come.

In such an area it was deemed especially desirable to determine the attitudes and suggestions of local farmers and officials concerned with farming. More than 20 were interviewed. The most important conclusion was that though most of the farmers spoken to were born outside the area, and some outside of northern Norway, only one or two showed desire to leave. Most recognized their lot to be hard work, nearly all acted as though they expected it. Otherwise, answers to questions were quite similar to those in the Hattfjelldal sample area.

necessity of a quick start, the need for machinery, the desirability of a large barn quickly, the necessity for much larger farm sizes, the desirability of telephonic service at first and electricity as soon as possible, the advisability of helping people on older farms in an area where bureiser are being introduced, and the clear-cut need for adjustments to local conditions. Examples of the last in the Valley were those farmers who raised mountain reindeer at first and some who spaced drainage ditches or selected building sites more conservatively than advised by local leaders.

These local officials also had recommendations concerning rural settling procedures in the Pasvik. One felt a state area should be developed around five points: 1) road and main drainage ditches established first, 2) plan total development in relation to a detailed plan of a community center, 3) cultivate about 20 decare (5 acres) with machines on each farm before the settler brings his family and starts building, 4) electricity and telephone should be introduced with the start of settling rather than 10-20 years later (as happened at many of the Valley's farms), and 5) the individual farmer needs a house before a barn. The last is undoubtedly in response to those bureiser who recommend building a large permanent barn first (though they were usually balanced in the interviews by a wife's countering that the house must be built first!). Another official very close to the homesteaders in the Valley agreed with these and added: 6) the need for a qualified "leader-type" farmer (as noted in Fiplingdal), 7) careful pre-settling study of availability of water, 8) the desirability of concentrating cultivated land so as to use

machinery efficiently, 9) farm sizes should be much larger, 10) building materials should be nearby each place, and 11) the requirement of a total overall plan for an area to be developed.

The most interesting omission in all interviewee's answers and comments was any suggestion as to how to select the settlers for a project. Though the action is by and for people only a few persons have approached the problem more than obliquely. Yet each insisted on careful inventories of all the other elements of a landscape. Why so many people dislike the discussion of judging others is puzzling, especially in view of the fact that most persons are making significant judgments of family, colleagues, and employees regularly. But in this respect the Norwegians in the Pasvik were no different from other nationals, with the possible exception of the Finns.

In total, Norwegian settling experiences provide an interesting contrast with those in Finland and Sweden. In Norway changes have been much more the spot and short-line type rather than areal in aspect. There, too, it is possibly more essential to understand the overall national characteristics of occupations because of the complex patterns of degrees of local and regional isolation as well as countrywide desires.⁶⁹

In general, the delineation of the Norwegian fringe of settlement zones raises four significant points: 1) settling or abandoning of areas depends first upon national governmental desires, 2)

the occurrence of MFZ and OFZ in the latitudes and physical sites of northern Norway should prove encouraging to persons wishing for the development of equally isolated areas elsewhere in the world, 3) continued new agricultural-forestry settling in north Norway's Outer Fringe Zone is against the usual trends and should be watched carefully and continually, and 4) the system of classification may have been inadequate in the first place.

Footnotes

1. Provisional measures of isolation and classification of Norway were first presented in K. H. Stone, Norwegian Fringe of Settlement Zones, paper read at the meeting of the Association of American Geographers, Pittsburg, Pa., 1958. However, the measures proved to be insufficient as work progressed from Norway, where the Nordenic part of this project began in 1955-56, so its reclassification as presented herein was not done until 1962.
2. Two of the better photographic references in which the overall appearance of the CS Region may be seen are: F. J. Gullaksen, "Der Ligger et Land--" ("There is a Land--"), Bergen, 1949 and Bergens Privatebank, Norway by Camera, Bergen, 1955.
3. A. Sømme (ed.), The Geography of Norden, Oslo, 1960, map 9.
4. Ø. Rødevand, Avfolkning av Avsidesliggendes Norske Bygder (Depopulation of Remotely Located Norwegian Districts), Kulturgeografi, v. 7, 1955, pp. 65-69 and Å. B. Tschudi, Avfolkningen i Vest-Agder og Nedlegningen av Heiegårdene, Saerling i Sør-Audnedal og Spangereid (Depopulation in Vest Agder and the Preservation of Upland Farms, Especially in Sør-Audnedal and Spangereid), Norsk Geografisk Tidsskrift, v. 5, 1934, pp. 207-248.
5. In Norway there is great dependence of the inhabitants upon local scheduled small boat service and that of busses as well as other usual forms of transportation. Therefore, the schedules of every transport agency in the country are published monthly and sold at most news stands for 3 NK (c20 cents U.S.A.).
6. See also Statistisk Sentralbyrå, Bosettingskart over Norge (Settlement Map of Norway), 1/400,000, Oslo, 1955, 15 sheets; divisions of population numbers are on the basis of different symbols for each 25 people up to 300 and then proportional-area circles for places with more than 300 residents. See also L. Sommers, Møre og Romsdal County, Norway: Population Distribution, Journal of Geography, v. 50, 1951, pp. 309-317.
7. H. S. Kemp, Trondhjem: A Sub-Arctic Phenomenon, Journal of Geography, v. 35, 1936, pp. 209-224.
8. We have prepared a manuscript map, scale of 1/2,000,000, of all Ny Jord colonies founded between 1908 and 1955 from data in (No author), Selskapet Ny Jord (The New Land Society), 1908-1958, Oslo, 1958 and from information provided by Secretary G. H. Paulsen of that society; to several other administrators of that organization we are indebted for field experience and for specific data about certain colonies.
9. The significance of rail transportation to local people in north Norway is demonstrated amply in J. Broch, Ole Tobias Olsen og Nordlandsbanen (Ole Tobias Olsen and the Northland Railroad), Oslo, 1945.

10. Ø. Rodevand, op. cit., p. 66.
11. Note that the types of isolation are reversed from the usual ones used for this zone. This is another reflection of the complexity of the Norwegian Outer Fringe Zone, especially in the north where the government has taken special efforts to foster the continued populating of the area.
12. See, for example, Kommunal- og Arbeidsdepartementet (U. Olsen), Om Gjennomføringen av Utbyggingsprogrammet for Nord-Norge (On the Accomplishments of the Program for the Development of North Norway), St. Meld. No. 48, Oslo, 1958, *passim*, and Utbyggingsfonder for Nord-Nord, Utbyggingsprogrammet for Nord-Norge, 1952-1960, Bergen, 1961. See also T. Lloyd, The Reconstruction of North Norway, 1945-1955, Technical Report, ONR 438-63-04, 1956, mimeo.
13. Note the distinction between the sea-Same, the reindeer-Same, and the agricultural-Same described so clearly in G. Gjessing, Changing Lapps, London School of Economics and Political Science, London, 1954, chapters V-VII.
14. H. W. Ahlmann, The Geographical Study of Settlements, Geographical Review, v. 18, 1928, pp. 93-128, especially pp. 118-124, and K. Larsen, A History of Norway, New York, 1950, *passim*.
15. Much of this section on emigration is based on J. E. Bacher, Norwegian Migration, 1856-1960, International Migration, v. IV, 1966, pp. 172-185.
16. Compared with .8% per year for Finland and .6% for Sweden in the same period.
17. Statistisk Sentralbyrå, Statistisk Årbok, 1964 (Statistical Yearbook, 1964, Oslo, 1964, p. 5. The rural-urban movement required more adjustment in Norway than in some countries for which see P. A. Munch, A Study of Cultural Change, Rural-Urban Conflicts in Norway, Oslo, 1956.
18. G. Jahn, Norway's Population Problem, American Scandinavian Review, v. 25, 1937, pp. 118-128, and J. Doublet and H. Palmstrom, Problèmes démographiques en Norvège, Population, Oct.-Dec. 1946, pp. 650-662.
19. Statistisk Sentralbyrå, Statistisk...., op. cit., p. 18 and O. J. Adamson (ed.), Industries of Norway, Oslo, 1952, particularly pp. 11-19.
20. Copies of these maps, four sheets for each period, on a scale of 1/1,000,000 and done in 1948, are in the library of the Statistisk Sentralbyrå in Oslo; we are grateful to its staff for permission to obtain photographic copies.

21. A. Soderlund, Befolkningens Fordeling i Norge (Population Distribution in Norway), Kristiania (Oslo), 1923, with two maps, scale of 1/1,000,000 (data for towns based on the 1920 census and data for rural areas based on 1910 census returns modified by questionnaires and field work in 1917 and 1918).
22. Considerable material in this and the following two sections is from three references: Statistisk Sentralbyrå, Bureising med statstøtte, 1921-1936 (Homesteading with State Grants, 1921-1936), Norg. Off. St. X, Oslo, 1941; E. Gjelsvik, Bureising (Homesteading), Oslo, 1939; P. Borgedal, En vurdering av statensstøtte til nydyrking og bureising i Norge (An Evaluation of State Grants for Land Reclamation and Homesteading in Norway), Gjølvik, 1954.
23. In 1850 tenant farms made up about two-thirds of the farms in all of Norway.
24. The story of the society is abstracted from details given in Selskapet Ny Jord, Selskapet Ny Jord, 1908-1958 (The New Land Society, 1908-1958), Oslo, 1958, in P. Borgedal, op. cit., item 15, and recorded in my notes of several discussions in the field with administrative personnel, especially Secretary G. H. Paulsen.
25. One of the more interesting discoveries during the research for this study was the Ny Jord policy on house building. Before the society had constructed 130 homes it learned that it was too expensive in money and, above all, settler dissatisfaction to do this. It stopped building the houses in 1924. Yet, 11 years later when preparing for the Matanuska Valley colony in Alaska United State's planners repeated the error -- and produced the same results. It was to discover such guides as this, simple procedurally but so important to the settlers and planners, that this study was started.
26. Selskapet Ny Jord, op. cit., pp. 132-133.
27. We have all the Ny Jord settlements plotted on a manuscript map, scale of 1/1,000,000, according to date of founding and number of farms.
28. Ny Jord, v. 54, 1967, p. 108.
29. Statistisk Sentralbyrå, Bureising...., op. cit. However, a geographer preceded this with the first published maps on the effect of the program, showing the per cent of 1939's cultivated area which was newly cultivated between 1918 and 1939, in L. H. Hertzberg, Nydyrkingen i Tre Østlandsbygder, 1918-1939, (New Cultivation in the Eastern Areas, 1918-1939), Norske geografiske selskab (a 1944, maps on pp. 10 and 11.
30. Letter from Secretary Olav Ringstad to K. H. Stone, Oslo, December 19, 1957.

31. Tabulation from Secretary Olav Ringstad to K. H. Stone, Oslo, May 6, 1964.

32. One article, prepared early in the program's life, notes that between 1903 and 1927 there were 74,483 families either newly settled or improved by state aid and tied to agriculture whether dwelling in rural or urban areas: J. Frost, Landwirtschaftliches Siedlungswesen in Norwegen, Reichsminister Ernährung von Landwirtschaft, Berichte von Landwirtschaft, N.F. 11, 1930, pp. 280-288. This is more than four times the total number of bureisere determined during this study with the use of original records for the period 1920 through 1963. If the figures given by Frost are correct it is another example of how terms may be used in varying ways and thereby produce incomparable results.

33. A series of 88 manuscript maps has been prepared of the geographical characteristics of the bureisere program. There are two maps for each year from 1920 through 1963 showing the number of new bureiser in each of the country's smallest civil divisions, herreder (the districts). In addition, a summary set of 10 manuscript maps has been prepared showing the percentage of farms in 1949 occupied by bureiser and classified as 0-10%, 10-20%, 20-30%, 30-40%, and more than 40%.

34. G. Gronbech, Agricultural Policy in Norway, Foreign Agriculture, v. XVI, 1952, pp. 50-53 and map on back cover.

35. A. Løddesøl, Det Norske Myrselskaps Myrinventeringer (The Norwegian Bog Association's Bog Inventory), Meddelelser fra det Norske Myrselskap, 1941, pp. 1-22; A. Løddesøl, Bog Inventory in Norway, International Peat Symposium, Section B1, Dublin, Ireland, July 1954, pp. 1-3; A. Løddesøl, Myrene i Næringslivets Tjeneste (The Bogs in the Service of Supporting Life), Oslo, 1948, pp. 42-58; and A. Løddesøl and J. Lid, Myrtypen og Myrplanter (Bog Types and Bog Plants), Oslo, 1950.

36. Two methods of creating tributary drains, for example, employ waste pine slabs from small sawmills and a third uses a new machine that creates a tube underground by compaction around a missile-shaped object at the end of a thin rod.

37. Kontoret for områdeplanlegging i Hedmark og Oppland, Hedmark, en Statistisk-økonomisk analyse (Hedmark, A Statistical-Economic Analysis), Hamar, 1955.

38. As disclosed by Øivind Rødevand's manuscript maps, of average income per capita by herreder for 1946, on file at the library of the Statistisk Sentralbyrå in Oslo.

39. L. H. Hertzberg, op.cit., map on p. 81 as well as lists of bureiser by location and date obtained from local officials.

40. L. H. Hertzberg, Innberetning fra reise i Trysil sommeren 1943 for Dr. A. Sømme (Report on Travel in Trysil in the summer of 1943 for Dr. A. Sømme), Oslo, 1943, 31 pp., mss.
41. A. Vatnebryhn, Bureisingen i Hedmark, 1922-1950, (The Homesteading in Hedmark, 1922-1950), Hamar, 1951.
42. ibid., p. 24.
43. Selskapet Ny Jord, op. cit., p. 132.
44. Data copied from official records in the County Road Office in Hamar on July 6, 1958.
45. J. W. Cappelens Forlag, Norge Bil- og Turistkart (Norway, Auto and Tourist Map), scale 1/325,000, Oslo, 1965, sheet 3-4.
46. A manuscript map of the dates of erection of electric lines, since 1937, in Trysil District was prepared in manuscript form for this research on a base of sheets II and II of Hedmark vegkontor, Vegkart over Hedmark Fylke (Road Map of Hedmark County), scale 1/200,000, Oslo, 1954.
47. D. E. H. Hayward, Transhumance in Southern Norway, Scottish Geographical Magazine, v. 64, 1948, pp. 71-81 and A. Coleman and S. H. Beaver, Dale-i-Sunnfjord; a study in changing geographical values, Geographical Journal, v. 121, 1955, pp. 51-63.
48. Kontoret for områdeplanlegging, Troms, en Statistisk-økonomisk analyse (Troms, A Statistical-Economic Analysis), Oslo, 1953 and N. A. Ytreberg, Troms Landbruksselskap gjennom hundre år, 1855-1955, (Troms Agricultural Society through a Hundred Years, 1855-1955), Tromsø, 1955.
49. E. Gjelsvik, op. cit., p. 7 and I. Saeter, Maalselvdalen (The Maal River Valley), Oslo, 1926, pp. 21 ff.
50. R. S. Yohe, Norway Is Developing the Agriculture of Its Northland, Foreign Agriculture, v. IVII, 1953, pp. 183-187 and Kontoret for områdeplanlegging, Troms,, op. cit., passim. The story of the long struggle to expand the cleared land on a farm in the area is demonstrated nicely in M. Allfresde, Un Exemple de Mutation dans la Vie pastorale sub-arctique Norvégienne: La Ferme de Brattli (Troms), Revue de Géographie de Lyon, v. XL, 1965, pp. 77-99.
51. (No author), Bureisningsfeltet, Gressmyrskogen-Høgli, scale 1/8000, copy of manuscript map (made in Tromsø?).
52. Ny Jord, Ny Jord, op. cit., p. 133.

53. *ibid.*
54. Kommunal- og Arbeidsdepartementet, op. cit., and Utbyggingsfonder for Nord-Norge, op. cit.
55. See also C. Bernard, *Problemes de Communications en Norvege du Nord*, Revue de Géographie de Lyon, v. XXXV, 1960, pp. 317-333.
56. Statistisk Sentralbyrå, Folkemengden i Herreder og Byer, 1 Januar 1964 og Foreløpige tall 1 Januar 1965 (Population in Rural Districts and Towns 1 January 1964 and Provisional Figures for 1 January 1965), Norges Offisielle Statistikk A 119, Oslo, 1965, pp. 44-45.
57. Kontoret for områdeplanlegging i Nordland, Nordland, En Statistisk-økonomisk analyse (Nordland, A Statistical-Economic Analysis), Bodø/Oslo, 1954.
58. Some of the history of settling the area is condensed from many parts of J. M. Ingebritsen, Storjorden, Hattfjelldalens Bebyggelse (The Big Land, Hattfjelldal's Settlement), Mosjøen, 1923; I am deeply indebted to Mr. Karl Helmersen of Hattfjelldal for loaning his copy of this out-of-print item so that a reproduction could be made for this work. Also, liberal use has been made of historical data obtained from local officials during interviews.
59. Letter from Fylkeslandbruksjefen (The County Agricultural Director) Bjarne Hovde to K. H. Stone, Bodø, Nov. 30, 1956.
60. From data obtained at local district offices in 1958.
61. Statistisk Sentralbyrå, Folkemengden i Herreder...., op. cit., pp. 40-41; allowance needs to be made for the transferring of a part of Hattfjelldal district to another district in January 1964.
62. For the variety of the county see Kontoret for områdeplanlegging (H. Luhn), Finnmark, En økonomiske analyse (Finnmark, An Economic Analysis), Oslo, 1952.
63. S. Mosling, Pasvikdalen i gammel og ny tid (The Pasvik Valley in Old and New Times), Sør-Varanger 100 År, Supplement to Sør-Varanger Avis, 13 September 1958, pp. 7 and 16, data from interviews with local officials, and figures from various censuses taken since 1801.
64. T. Lloyd, Iron Ore Production at Kirkenes, Norway, Economic Geography, v. 31, 1955, pp. 211-233, especially pp. 218-223.

65. Another rare combination is the local citizens who did so much to aid this study. Many gave much but those in Kirkenes who went out of their way several times to provide all kinds of help, and to whom we are specially grateful, are: Commodore A. Rygg, Royal Norwegian Navy and Boundary Commissioner, Engineer B. Helskog of Sydvaranger Company, Fylkelandbrukssjef A. Bartholsen, and Feltbestyrer A. Mostad.

66. The destruction or reconstruction of the Pasvik Valley and Kirkenes areas are presented in many references. See, for example, M. Allefresde, Villes arctique...., op. cit.; T. Lloyd, The Reconstruction...., op. cit.; T. Lloyd, Reconstruction of Transportation in North Norway, Technical Report ONR 438-03-06, Hanover, N. H., 1956, mimeo.; D. H. Lund, The Revival of Northern Norway, Geographical Journal, v. 109, 1947, pp. 185-197.

67. A specific problem regarding the use of this road is that the distances involved in delivering milk are so great that a farmer does not get his cans back before the next pick up. Thus, each farmer must have two sets of cans which is rather expensive.

68. T. Lloyd, Iron Ore...., op. cit., p. 230.

69. H. W. Ahlmann, Norge, Natur og Naeringsliv (Norway, Nature and Means of Living), Oslo, 1962; A. Sømme, Jordbrukets Geografi i Norge (Geography of Norwegian Agriculture), Bergen, Text 1954, Atlas 1949; V. H. Malmstrom, Norden, Crossroads of Destiny, N. Y., 1965, pp. 21-30, 51-63.

Chapter 3

Icelandic Zones and Experiences

The delineation of Icelandic zones and recent rural processes furnishes interesting variations from those in the rest of Norden. Iceland has only two fringe of settlement zones and though there is some rural settling the dominant process is abandoning. So it is unlike Norway where new settling is occurring in a similar zone, somewhat like Sweden excepting that the losses are areally concentrated in one zone, rather like other Nordenic countries in that the socialistic form of government means direct concern of it with any rural change, but quite different from the others in accessibility and by virtue of its having an Unpopulated Region.

These differences are partly a result of Iceland's location and physical character as well as recent historical events there. As a high latitude island, with its few lowlands separated by low and high mountains, its accessibilities are restricted.¹ As one of the allied free nations during World War II it was a center for offensive activity, suffered relatively little direct war loss, but was upset at least economically and emotionally. As a proud and free nation, with a long history of democratic government and limited exports, it occasionally has had difficulty in maintaining its balance.²

The application of the measures of isolation to Iceland produces a simple pattern. There are two regions: one of Discontinuous Settlement in a band 10-180 km. (6-112 mi.) around the outside of the island and an Unpopulated Region, Norden's only one, as an



Fig. 8-1

interior rectangle about 155 km. (96 mi.) north-south by 230 km. (143 mi.) east-west (Fig. 8-1). The absence of a Continuous Settlement Region is a product of both low to moderate regional isolation and clustered and spotty distributional patterns of dwellings. Also, there is no Inner Fringe Zone.

Middle Fringe Zone

In the southwestern corner of the island, centered on the city of Reykjavik, is the only occurrence of the Middle Fringe Zone (Fig. 9-1). It is a roughly triangular area about 165 km. (102 mi.) along the coast and extending inland about 80 km. (50 mi.).

The principal pattern of the zone's inhabited part is groups of clusters and interrupted areas of dwellings within 5 km. (3 mi.) of each other. These are divided into two main parts, a northern section which includes a coastal strip on either side of Reykjavik and a southern triangular part (Fig. 8-2). The city, with its 80,000 people (in 1966) dominates the settlement of the area in numbers of buildings.

Both regional and local isolation are moderate. The island is connected to Europe and North America by daily air service and by vessels sailing under many flags. There are no railroads on the island but in the Middle Fringe Zone there is a relatively dense network of roads (Fig. 8-3). These routes are usually two-way and unpaved in the rural area but open all year around and buses operate over them to connect all major villages. There is, in addition, considerable boat traffic along the shore. Furthermore, most farms in Iceland have telephones.



Fig. 8-2

Inasmuch as the settling of Iceland began in this part the land suitable for agriculture has long since been taken up in farms. It was about 930 AD when the Norwegians arrived and they began occupying the area with a farming-fishing economy. This has remained to the present so that with the increase in population the land suitable for agriculture has been expanded as far as possible (and even farther in the places where natural hot water is used in the greenhouse culture of vegetables and flowers).

Outer Fringe Zone

The remaining coastal strip, in varying widths, is the Outer Fringe Zone though the principal area is on the northern and eastern sides of the island (Fig. 8-1).

There the distribution of dwellings is linear in various widths. In the Isafjordhur Peninsula of the northwest the lines are narrow and along the shore, along most of the north coast they are wider lines at right angles to the shore, and on the eastern shore once again mark narrowly the shore itself (Fig. 8-2). Occasionally the pattern changes to spots, particularly on the inland side of the zone. Often, however, the change is sharp because of the sudden steep slopes leading to the central highlands; in fact they are so steep that the usual Outermost Fringe Zone is absent. Almost everywhere, though, dwellings are less than 200 meters (656 ft.) above sea level.

Accessibility in the zone is poor. In much of the part where inhabited areas are along the coast transport is almost entirely by boat. Where the inhabited areas are in valleys access is by one-lane unsurfaced routes, often open only seasonally, which usually



Fig. 8-3

lead to the two-lane gravel-surface road connecting Reykjavik and Akureyri, second city (13,000 people) of the island and in the middle of the northern coast (Fig. 8-3). This means that individual settlers near the heads of valleys, like the more isolated people along the coasts, are really in the Outermost Fringe Zone classification but they are too few to make an area of such on small-scale maps like Figure 8-1. It is seemingly a paradox that the principal cities and towns of this zone are linked with Reykjavik by local regularly scheduled airline service.

Unpopulated Region

In the central part of Iceland is the largest uninhabited area in Norden. In only a few parts are there even temporary shelters, occupied by sheep herders in summer. Only one road cuts across the region and it is really a trail in parts. Its only use is in summer when some sections of the region are pastured but the higher, rougher, or glacier-covered sections provide no hope for any present or future settling. This has been recognized since early times for the boundaries of the minor civil divisions of Iceland (the sýsla) run from the coast inland but have never been marked out in the central part of the island.

Abandoning³

Abandoning of rural settlement has been and is mostly a problem of the Outer Fringe Zone. But it is a concern of long standing which has become more acute with the passage of time; in 1915 about 2% of the 6400 farms in Iceland were abandoned but in 1961 some 26% of the 7300 farms in the country were deserted.

There were three major areas of abandoning, all on the western coast.⁴ The worst was the northwestern coast of the northwestern peninsula (Isafjordhur), the second area was the coast of the central western peninsula, and the third the coast of the peninsula just west of Reykjavik. The process has been by thinning out of occupied dwellings in areas with poor or no land transport. Four minor areas of abandoning were the eastern and western coasts of Isafjordhur, the eastern Icelandic valley focused on Egilsstadir (Fig. 3-3), and the central eastern coast. Abandoning is going on elsewhere, particularly in western Iceland, but is less areal in aspect when mapped. In general, all these farms were small in size, of below-average value, and only one-fifth of them had buildings suitable for real use without rebuilding.

The reasons for abandoning, analyzed in some detail by Gudbergs-son, need only be listed to recognize parallels with guides to rural settling in the rest of Norden. They are: changes in agriculture and other occupations, lack of capital or low income, expansion of towns and villages, insufficient or unequal public services, inadequate transportation facilities, limitations of education above the primary level to only four places, absence of electricity, severe climatic conditions, natural disasters (vulcanism, earthquakes, floods, avalanches)⁵, severe erosion, and limited area for cultivation.

Future Developments

Several attempts in the recent and distant past have been made to adjust to the problems of farming in Iceland. Some have been changes in method.⁶ Some have been by governmental encouragement

of new settling (with an eye to reducing the dependence upon and cost of imported foods). In the 1950s some 16 group settling operations were being encouraged; the largest was planned to have 10 farms, the average about 5, and by 1959 there were 43 farms of the total 84 planned.⁷ Approximately 200 other farms were proposed, most of them as singles.

The trend in Iceland, however, is away from the farms to the villages and, eventually, to Akureyri and Reykjavik. Individual people probably are moving in the same series of short-distance moves described for inner northern Sweden (Chap. 6). But urbanization has been developing for many years.⁸ More recently it has accelerated for while the country with Europe's highest growth rate went from a total of 71,000 people in 1890 to 194,000 in 1965 the rural district percentage plummeted from 89% to less than 18% in the same years.⁹ In a recent study of possible development major emphasis was placed on the significance of a circulation network, the increased importance of Reykjavik (though slowing down in rate of increase) and Akureyri, possible rapid growth of three existing villages (two western and one southern), and the development of a new city in eastern Iceland.¹⁰

It seems likely, therefore, that rural abandoning will continue in Iceland. As it does an unusual opportunity will be available for analysts to determine why the process occurs in different localities and what the costs are. This information is needed to help prevent overextension of new rural settling in Nornam.

Footnotes

1. V. H. Malmstrom, A Regional Geography of Iceland, NAS-NRC Publ. 584, Washington, 1958; (British) Naval Intelligence Division, Iceland, B.R. 504, London, 1942; J. Nordal and V. Kristinsson (eds.), Iceland, 1966, Reykjavik, 1967.
2. For a contemporary example see H. B. Ellis, Boom Island Faces Leaner Days, The Christian Science Monitor, October 7, 1967, p. 10.
3. Deserted farms are shown on each of the 115 topographic sheets of Iceland, scale 1/100,000, published by the Danish Geodetic Institute, Copenhagen, 1945, and assembled into a bound atlas. However, most of the generalizations about abandoning in Iceland are based upon the details in G. M. Gudbergsson, The Geographical Characteristics of Icelandic Farm Abandonment, 1915-1961, unpublished Master's Thesis, Department of Geography, University of Wisconsin, Madison, 1965.
4. ibid., Fig. 3.
5. S. Thórarinnsson, The Thousand Years Struggle Against Ice and Fire, Reykjavik, 1956.
6. I. Y. Ashwell, Recent Changes in the Pattern of Farming in Iceland, Canadian Geographer, v. VII, 1963, pp. 174-181.
7. P. Einarsson, Landnáð ríkisins (National Agriculture), manuscript, 1960, pp. 5-6.
8. S. Thórarinnsson, Population Changes in Iceland, Geographical Review, v. 51, 1961, pp. 519-533.
9. Nordal and Kristinsson, op. cit., pp. 24 and 28.
10. V. Kristinsson, Proposed Development Areas in Iceland, Reykjavik, 1961.

Part IV

NORNAMIC FRINGE OF SETTLEMENT ZONES

Chapter 9

Canadian Zones

This study was founded on the premise that rural settling processes could be expected to be similar in two parts of the world which are generally alike. The two are Norden and Nornam, analogous in general and much more akin in detail than not. But they are different in rural settling experience. Norden has had much, Nornam comparatively little. And Nornam needs much. So one contribution of the study can be to collate and analyze Nordenic experience. But both of these super-regions are large and each has considerable diversity in form of rural settlement so it is necessary to delineate areas of similarity. Thus, another contribution from this research can be an outlining of the fringe of settlement zones in Nornam on the same bases that they have been delineated in Norden. Then the transfers should have applicability within similar zones and any lack of experience in a Nornamic area may be made up, at least in part, by Nordenic empiricism. That there is need for this kind of guidance is clear.

In the Canadian part of Nornam an increase in numbers of people is inevitable. Population growth characterizes modern Canada.¹ Between 1945 and 1964 the Dominion's total increased nearly 59 per cent from 12.1 million to 19.2. Part of this was natural increase. The other part was from immigration; a total of 2.2 million persons for the period with the annual figures ranging between a high of 280,000 in 1957 and a low of 70,000 in 1961. In January 1962 a

new immigration policy was adopted² and the numbers have been increasing rather rapidly since. So continued growth of the Dominion population may be expected and even though the new policy encourages the immigration of skilled and semi-skilled persons who are likely to go to urbanized areas there is certain also to be settling in rural areas. To the latter the dominion and provincial governments encourage movement through their officials, in governmental offices and with the railroads, and by direct and indirect subsidies. As is clear from Norden, if a government wants new settling, by either positive encouragement or by not taking punitive actions against illegal settling, it is likely to get it. So the questions then arise, should the settling be controlled, guided, or completely free? And, should it be by individuals or groups, restricted to certain areas or allowed anywhere? Canada and the provinces have chosen combinations of guided and controlled settling for individuals and groups. Then further questions arise as to how to guide and it is here that the delineation of fringe of settlement zones and the use of experience in similar Nordenic zones could be useful.

Mapping the Canadian Regions

Canada could hardly be mapped as Norden was. The area is too great for the detail required by the measures of isolation; cartographic coverage is not available for it and the use of photographic coverage would have required an inordinate amount of labor and expense. So sampling was used. Some 42 strips were selected at

representative and critical places with respect to the distribution of population; widths were 8-15 miles and lengths, in the western half of the country, averaged 75-100 miles whereas those in the eastern part were 40-50 miles.³ For each strip vertical air photos were interpreted to locate each inhabited dwelling, classify it as to permanence, and locate it with respect to transportation lines and other dwellings.⁴ However, all railroads, roads, and water and air routes were mapped for the whole Dominion on a scale of 1/2,000,000; the classification of the inter-regional lines is still provisional because of the east-west orientation, rather than the north-south, of these.⁵ In general, the classifying of Canada was no more difficult than of Norden though the Canadian distributions are the more complex geographically (Fig. 9-1).

Continuous Settlement Region

The Canadian CS Region is composed of two parts. The western one is in the southeastern Prairie Provinces; it is 100-200 miles wide and centered on a line from central Saskatchewan southeastward about 500 miles to central-southern Manitoba. The eastern one is 50-125 miles wide and centered on a line from the city of Windsor northeastward more than 700 miles to Quebec city (Fig. 9-1). In both parts there are practically no interruptions in tracts of at least a few hundred square miles and most of the land is used for agriculture. People are close, everyone being within three miles of neighbors in six or more major directions. There is a dense network of railroads and roads, oriented in many directions and includ-

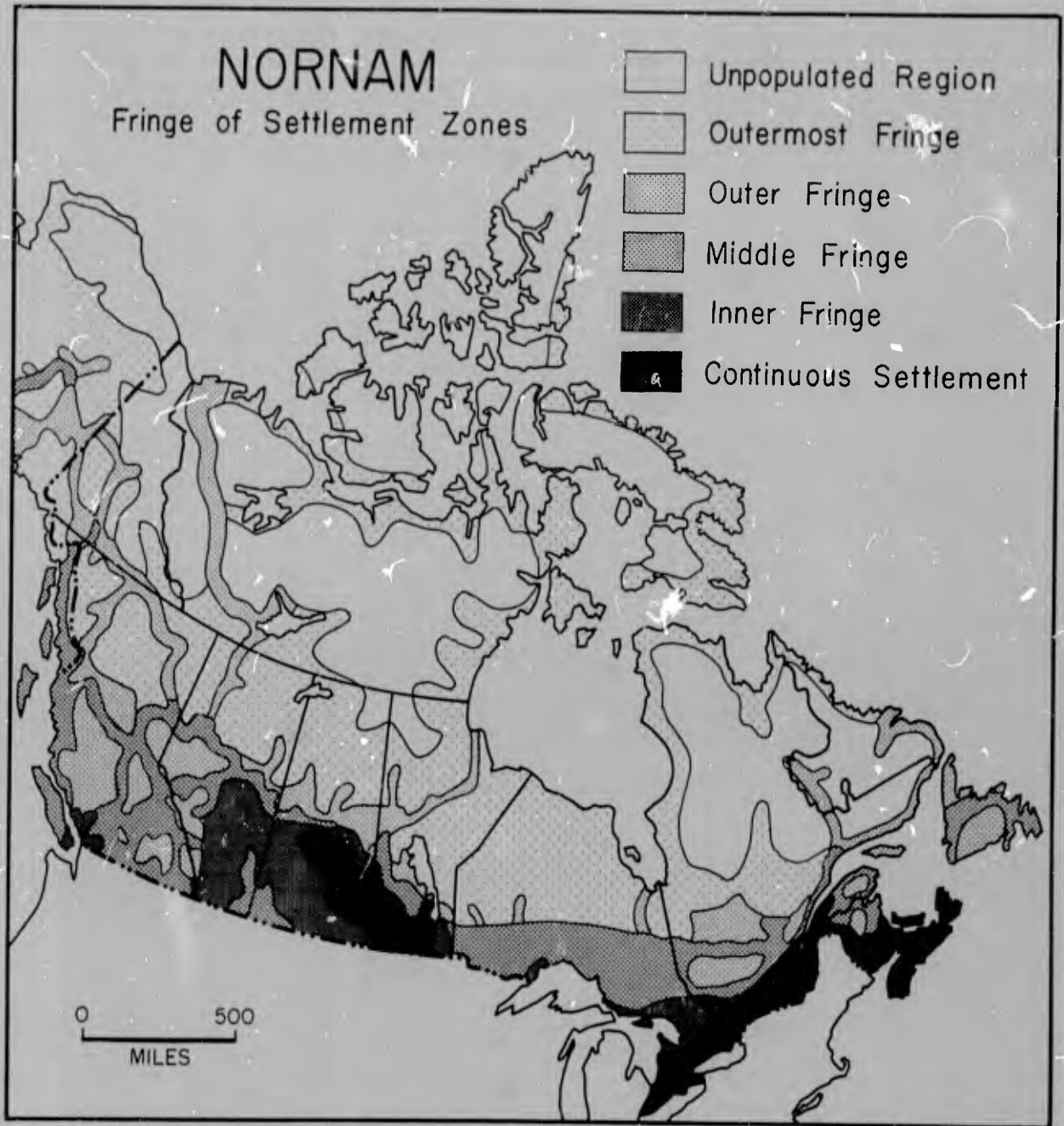


Fig. 9-1

ing inter-regional types. These are supplemented by air routes and, in the eastern part, by seasonal water transport. Telephones are everywhere. Most of the land is privately owned: parcels in public and corporation ownership are a distinct minority. Urban centers of all sizes up to Montreal's more than two million inhabitants are included. Most of the settlement has the highest degree of permanence. Geographically there is little or no regional isolation, no local isolation, and people can get or give aid in most any direction. Therefore, most new rural settling would be relatively easy--if there was room for it.

Inner Fringe Zone

The Discontinuous Settlement Region covers about the southern half of Canada. Within it and adjoining the two parts of the CS Region and the southern border are the four sections of the Inner Fringe Zone (Fig. 9-1). At the southwest corner, in British Columbia, is one small part⁶ and at the northwestern edge of Lake Superior is another; each is classified tentatively until the adjacent U.S.A. is mapped. The IFZ of the Prairie Provinces has three arms of which the two westernmost are 100-150 miles wide (separated by 200 miles of Middle Fringe Zone in Palliser's Triangle), extend north of the border nearly 400 miles beyond Edmonton, and are mapped as Inner Fringe because of interruptions in continuity of residential distributions in the vicinity of Battleford, Saskatchewan and in southern Alberta; the northern arm is narrow, 15-60 miles wide, and runs from about Prince Albert to southeastern Manitoba.

Eastward of Lake Huron the zone reoccurs on the northern side of the CS Region with a width of about 150 miles but midway to the St. Lawrence River narrows to 25-30 miles; on east of the river it widens again to include the southern half of the Maritime Provinces.

The zone is characterized by low regional and local isolation. The distribution of permanently occupied dwellings is such that people are present in interrupted areas or in clusters of groups. Cities included have populations of 790,000 in the Vancouver metropolitan area to 92,000 at Halifax, on the eastern coast, but most have fewer than 50,000 people. Running to or through each of the zone's four parts is at least one inter-regional railroad and several local rail lines 20-40 miles apart. The road net is denser with major roads 10-20 miles apart (and in a strongly rectangular pattern in the Prairie Provinces part) and the Trans-Canada Highway serves each section. These are supplemented in the Maritime Province and British Columbian sections by all-year ocean vessel service, by local air service to all four parts, and by inter-regional (and overseas) air routes to points in all but the Lake Superior part.

Thus, much of the zone has experienced settlers, transportation, and market and supply centers available, usually nearly in three or four directions from a settler. But there are unsettled areas. In general, these are presently considered to be unsuitable for settling because of physical site characteristics (e. g., slopes too steep, area subject to flooding, or too dry in the western parts

or too poorly drained, soils too stony, or slopes too steep in the eastern parts). But occasional spots, carefully selected, might be adaptable by individual settlers. These are the same circumstances found in the zone in Norden.

Middle Fringe Zone

In multiple occurrences the Middle Fringe Zone is found from coast to coast, mostly in the southern quarter of the Dominion (Fig. 9-1). All of the western coast is in the zone and it runs throughout the southern parts of the four western provinces mostly as irregular lines but occasionally as small areas like the central part of Palliser's Triangle. Usually it is transitional between the IFZ and the Outer Fringe Zone but in eastern central Saskatchewan (east of Prince Albert) this is not so and the MFZ is missing. On eastwards, in Ontario, is the largest part of the zone where a belt is 100-200 miles wide but in southwestern Quebec this splits in two, then is one strip in the northern Maritimes, and ends as a strip in central Newfoundland.

Throughout all of these the dwelling distributions are predominantly linear where people have nearby neighbors in two directions. But in some instances there are groups of clusters, close enough so neighbors are within three miles in three directions; these are in central western Alberta (including the Peace River area), central southwestern Manitoba, parts of the Clay Belt of Ontario and Quebec, and southeastern Newfoundland.

Throughout the zone either the regional or local isolation is moderate and in some localities both are. This partly explains the

linearity of dwellings because transport routes are very significant. Railroads are few in number and widely spaced but the paths of the Canadian National RR. (the more northerly) and the Canadian Pacific Railway are easily identifiable on a map of populations; only a few parts of the Middle Fringe Zone have sections classed tentatively as inter-regional, most of the zone's parts are crossed by at least one local line, and in nearly all instances the railroads' orientations are east-west.

The road pattern is different.⁷ Inter-regional roads are rare, major roads may be 50-100 miles apart, local roads often-dead-end in areas, and many are seasonally closed. At both the easternmost and westernmost parts of the zone roads are fewer than elsewhere in the zone but water routes, open all year, make up for the lack. Too, throughout the zone charter air service, via "bush planes", may be obtained in larger centers for flights to any point though this type of transportation may be restricted during freeze-up or thaw periods.

As in Norden, it is the MFZ where there appears to be room for new settling and where the relation of people to land is in tenuous balance. With isolation that is moderate regionally and varying locally any new settling there probably should be the group type but surely ought to be introduced cautiously. Abandoning could result and, in fact, already has locally in some MFZ (and IFZ) areas throughout Canada but here, too, there has been some sectional and local advancing.⁸ From some of the abandoning that has taken place it is clear that the selection of areas suitable for future

activity must no longer be controlled by single characteristics (e.g., soils, tree types, availability of people) but by the total evaluation of cultural and physical characteristics considered at a given time in the light of the local, national, and international desires and commitments. The openness of the Middle Fringe Zone may seem to hold out hope to some people but in an area of delicate balance it may be a false hope.

Outer Fringe Zone

Nearly 25 separate areas are classified as Outer Fringe Zone. These range from the Alaskan border southeastward to two parts of Newfoundland and the southern Labrador coast (Fig. 9-1). Mostly the parts are linear in shape but some small areas up to 200 miles square are included.

The predominant linearity reflects the distribution of dwellings. These are mostly in long and short lines but in the small areas there are some clusters of spots. It is seldom, though, that a settler has someone within three miles in more than one direction so the ability to get short-time aid is limited.

Dwelling distributions reflect attachment to transport lines. With the regional isolation high and the local moderate no one in the zone is far from some form of transport, most of which is seasonal or on which service is not provided on a daily basis all year. There are, for example, no inter-regional railroads and the only road tentatively classified as inter-regional is the Alaska Highway. Otherwise all transport is local, most often seasonally closed,

and usually is oriented north-south. The four longer extensions northward, from west to east respectively, are the Alaska-Canada Military Highway (also a local air route), the road-air-water route from the Peace River Block northwestward along the Mackenzie River to its mouth, the railroad to Churchill on the western side of Hudson's Bay, and the railroad to Schefferville at the Labrador-Quebec border. Other smaller parts of the zone jutting northward are mostly short railroads or roads extending from the Middle Fringe Zone into a large area of the Outermost Fringe Zone.

As a result of this north-south orientation there are many places where the zone is not present as a transition from the MFZ to the OMFZ. This is because the former is oriented east-west and the MFZ at right angles to it. Thus, the Outer Fringe Zone is missing in northern British Columbia and Alberta, in much of Ontario, and parts of Quebec.

Because the zone is so linear there is not so much apparent unsettled space as in Norden. In detail, however, dwellings are widely spaced singles or small clusters along a transport line so much of the area is unoccupied; these lines represent a "leap-frog" type advance from a point to a point rather than along a line continuously.

Outermost Fringe Zone

The OMFZ is areally the largest of the four zones in Canada. It is nearly continuous from the Alaskan border in two directions. One is southeastward in a 200-500-mile-wide belt to nearly the St. Lawrence River. The second is eastward in a narrow coastal belt

to middle Labrador; it has exceptions at the Distant Early Warning Line stations but these were temporary when installed and now some have been closed (Fig. 9-1).

The zone has the maximum isolation of the four. Regionally it is very high and locally it is high. The population distribution is spotty, either small villages 25-100 miles apart or individual settlers separated by tens of miles. Transport is limited to seasonal water or widely separated air routes.

It is clear that the Outer and Outermost Fringe Zones are those of maximum difficulty for new settling. There are too few people present and many of them could give only limited advice to persons who probably would be settling there for modern commercial purposes rather than mere subsistence. Provision of basic facilities would be excessively expensive. In fact, present consideration might best be whether or not settlers now there be encouraged to leave rather than stay.

The Unpopulated Region

The remainder of Canada is unpopulated. There are four such parts from the far northwest to central Labrador (Fig. 9-1). Each is hundreds of miles in dimension, without transport routes and permanent residents excepting those maintained at specialized sites for military or weather observations. But each part of the zone is beyond consideration at the present time for new settling.

Recent Trends

In spite of the difficulties of developing a young nation with

the distributional patterns noted, Canada has grown in population and settled area during the present century. From a population in 1900 of 5.4 million the country went by decades through 7.2 million, 8.8, 10.4, 11.4, 13.8, to a 1961 figure of 18.2 million. By 1964 the total was 19.2 million and the annual growth rate since 1961 has been a stout 1.8%. Many of these people were European immigrants, encouraged by the Dominion to come, who in the early 20th century went to rural areas and more recently largely to cities. How these new settlers contributed to the sectional and local advances, both westward and northward, of occupied Canada is known generally and has been well documented.⁹ Most recently advancing has continued but only on local bases and countered, as previously noted, by retreat in other areas.¹⁰ The increases, however, are clear reflections of the Dominion and provincial governments' continued interest in attracting new settlers with some sort of skill. Further, such programs as the federal one to develop roads to the far north, the railroads' maintenance of colonization agents, the provincial policies as in Alberta¹¹, and private moves as in the iron ore country of Schefferville¹² show that growth is in everyone's mind. But Canada is large, has many kinds of expansion which may take place, and has relatively little and conflicting experience upon which to extrapolate continued rural settling with success. One possible aid is to profit from recent Nordenic happenings by way of the fringe-of-settlement zonal concept.

Significance of the Zones

The results of the delineation of the four zones are four items

of potential value in planning for new rural settling in Canada:

1) The measures of isolation are applicable in Canada as they were developed in Norden. Though there are some problems remaining in the mapping of inter-regional transport lines, it is clear that there are strong similarities between this part of Nornam and Norden with respect to combination's of settlers' accessibilities to each other and to extra-zonal areas. Therefore, experiences in settling, and abandoning as well, are interchangeable after allowances for some differences in economy, political nature, historical development, and some physical characteristics.

2) Outlining the zones ranks areas as to relative difficulty of new settling at present. Within Canada this guides consideration to the Inner and Middle Fringe Zones (assuming, of course, that the Continuous Settlement Region has been thoroughly considered first).

3) Delineation of the zones emphasizes the need for improvement of regional and local accessibilities in certain areas. In the Dominion it appears logical that efforts be focused first on the Inner and Middle Fringe Zones with a view to guiding new settlers toward a balanced economy and distribution if the governments continue encouraging new settling.

4) Demarcation of the zones also helps show the need for additional research on the elements of rural settling. Some of these, especially in Canada, are: the development of measures of permanence of settlement, preparation of additional measures of isolation, consideration of the distance settlers might move, the selec-

tion of settlers, the degree of detailed planning advisable, the timing of various actions, the guidance of settlers¹³, financing, and the time and methods anticipated for a settlement to develop maturity. Much of this will require detailed interdisciplinary study hardly yet carried out. But Canada needs it. And, it will be clear, so does Alaska.

Footnotes

1. M. F. Timlin, Does Canada Need More People?, Toronto, 1951; G. W. Wilson, S. Gordon, and S. Judek, Canada: An Appraisal of Its Needs and Resources, New York, 1965; T. Cnossen, Integration of Refugees, Some Observations on the Hungarians in Canada, R.E.M.P. Bulletin, Supplement 7, June 1964, pp. 1-24, see especially pp. 19-22.
2. M. F. Timlin, Canadian Immigration Policy: an Analysis, International Migration, v. III, 1965, pp. 52-70; G. D. McQuade, Trends in Canadian Immigration, International Migration, v. II, 1964, pp. 221-234.
3. As shown in the Department of Mines and Technical Surveys, Atlas of Canada, Ottawa, 1957, plates 47, 48, and 57; most were discussed with officials and the areas in which many occurred were checked in the field.
4. Each strip required tens to hundreds of recent air photos, with scales varying from 1/15,000 to 1/70,000, which were purchased from, and with much help of the personnel at, the National Air Photographic Library in Ottawa.
5. In part because of the provisionality of the inter-regional classification of these lines of transportation the usual maps of zonal railroads and roads are omitted. Also, to have included all three sheets for each type of transport and the 42 sample strips of plotted dwellings would have overloaded the chapter so the maps have been retained in manuscript form.
6. It is primarily the small size of the Vancouver area which prevents it being classified as a CS Region according to the system used herein but further mapping in adjacent Washington state might result in a change of the category. Still, the area around the city of Vancouver has the characteristics of the IFZ.
7. Atlas of Canada, op. cit., plate 86.
8. K. H. Stone, Human Geographic Research in Northern North America, Arctic, v. 7, 1954, pp. 321-335, especially Figure 1 on p. 322; B. G. Vanderhill, The Decline of Land Settlement in Manitoba and Saskatchewan, Economic Geography, v. 38, 1952, pp. 270-277; G. L. McDermott, Frontiers of Settlement in the Great Clay Belt, Ontario and Quebec, Annals of the Association of American Geographers, v. 51, 1961, pp. 261-273; J. W. Watson, Rural Depopulation in South-western Ontario, Annals of the Association of American Geographers, v. 37, 1947, pp. 145-154; C. W. Raymond and J. A. Rayburn, Land Abandonment in Prince Edward Island, Geographical Bulletin, No. 19, 1963, pp. 78-86; W. D. Ward and R. S. Thoman (eds.), Areas of Economic Stress in Canada, Kingston, Canada, 1965, pp. 22-70.

9. Department of Mines and Technical Surveys, Geographical Branch, Colonization and Settlement in the Americas, A Selected Bibliography, Bibliogr. Series, No. 25, Ottawa, 1960. The classic geographical work on the topic for the pre-World War II period is W. A. Mackintosh and W. L. G. Joerg (eds.), Canadian Frontiers of Settlement, Toronto, 1934, 9 volumes.

10. Studies disclosing advancing fringes, and post-dating the bibliography in footnote 9 are: P. Biays, Les Marges de l'Oekoumène dans l'Est du Canada, L'Univ. Laval, Québec, 1964; A. Krenzlin, Die Agrarlandschaft an der Nordgrenze der Besiedlung im intermontanen British Columbia, Frankfurter Geographische Hefte, 40, Frankfurt Am Main, 1965; E. Ehlers, Das nördliche Peace River Country, Alberta, Kanada, Tübinger Geographische Studien, Tübingen, 1965; H. Dorion, La frontière Québec-Terrenueve; contribution à l'étude systématique des frontières, Québec, 1963; E. Ehlers, Landpolitik und Landpotential in den nördlichen kanadischen Präirprovinzen, Zeitschrift Ausland Landwirtschaft, v. 5, 1966, pp. 42-54; J. Fried, Settlement Types and Community Organization in Northern Canada, Arctic, v. 16, 1963, pp. 93-100; R. T. Gejda, The Canadian Ecumene--Inhabited and Uninhabited Areas, Geographical Bulletin, No. 15, 1960, pp. 5-19; V. J. Parker, The Planned Non-Permanent Community, Dept. of Northern Affairs and Natural Resources, Ottawa, 1963; I. M. Robinson, New Industrial Towns on Canada's Resource Frontier, Univ. of Chi. Research Paper No. 73, 1962; B. G. Vanderhill, The Farming Frontier of Western Canada, Journal of Geography, v. XLI, 1962, pp. 13-20; B. G. Vanderhill, The Success of Government-Sponsored Settlement in Manitoba, Journal of Geography, v. XLI, 1962, pp. 152-162; W. C. Wonders, Postwar Settlement Trends in the Mackenzie Valley Area, Geografiska Annaler, v. XLII, 1960, pp. 333-338.

11. R. A. Benedict, Post War Settlement of Veterans in Alberta, Canadian Department of Agriculture, Ottawa, 1954; W. Odynsky, A. D. Paul, and V. A. Wood, Public Lands Open for Settlement in the Fringe Area of Central Alberta, Edmonton, 1953; W. Odynsky and V. A. Wood, Public Lands Open for Settlement in the Peace River District, Alberta, Edmonton, 1957.

12. E. Derbyshire, Amenities and the Notion of Permanence in Schefferville, Quebec, Acta Geographica, v. 16, 1958, pp. 3-16; G. Humphrys, Schefferville, Quebec: A New Pioneering Town, Geographical Review, v. XLVIII, 1958, pp. 151-166.

13. In this respect particular attention is directed to the highly contrasting results of settling in the Ontario-Quebec Clay Belt analyzed by McDermott, op.cit.

Chapter 10

Alaskan Zones¹

Alaskan forms of settlement and processes of settling are similar to the Canadian ones. Both areas are young in stage of development, each has undergone waves of "boom" settling based upon the recovery of valuable metallic ores, the two have equal need for complete inventories of physical and cultural resources, and both could benefit greatly from all sorts of guides for new settling.

It is new settling that has characterized Alaska during the 20th century, especially since 1935. Additional settlers were expected when westward movement in the conterminous United States reached the Pacific coast and the "Go West" philosophy quietly changed to "Go North". Not only were they expected, they were encouraged.² Examples of the latter were the extension of Federal laws governing mineral claims and agricultural homesteads from the Pacific northwest to Alaska as well as the exemptions permitted World War II veterans wishing to settle in the north. All the aids contributed and the population grew from 55,000 to 226,000 between 1920 and 1960; the forecasts for 1980 vary from 339,000 to 1,500,000.³

Between 1950 and 1960 about 40 per cent of the Alaskan population increase was immigrants.⁴ In the same period the state's rural population (that is, persons enumerated in single dwellings, and in clusters, hamlets, and villages with populations of less than 2500) grew from 94,000 to 140,000.⁵ So the new settling, which the new state continues to encourage, is likely to be rural as well as urban. With respect to at least the rural part two basic geographical questions are: where will the new rural settling take place and

why there?

Answers to the questions may be arrived at, as they were in Canada, by application of the measures of isolation to Alaska. In this instance, however, the value of the measures is considered greater by applying them as individual gauges and building them into the fringe of settlement zones rather than the procedure followed in the previous chapters.

Inhabited Areas

Determination of the inhabited areas, first step in classifying, depends on a map of the permanent dwellings. This was prepared from several sources.⁶ The main distributional characteristic disclosed in the resultant map is that most of Alaska has a spotty pattern and some of it a linear distribution of dwellings (Fig. 10-1). The spottiness reflects native and non-native attachment to widely separated points from which areally extensive occupations, like trapping, are carried out or where the area of attachment is limited to a mine or crossing of transport lines. Hints of linearity are present but generally on the scale of this map, much of the Alaskan population lives in dwellings which are more than three miles from neighbors in several directions.⁷

An exception is the somewhat greater proximity of residences in the southeastern quarter of the main part of the state, the triangle from Homer to Fairbanks to the Alaska Highway's crossing into Canada. There several people have neighbors less than three miles away in two directions where the patterns are occasional 10-to-20-mile-long lines

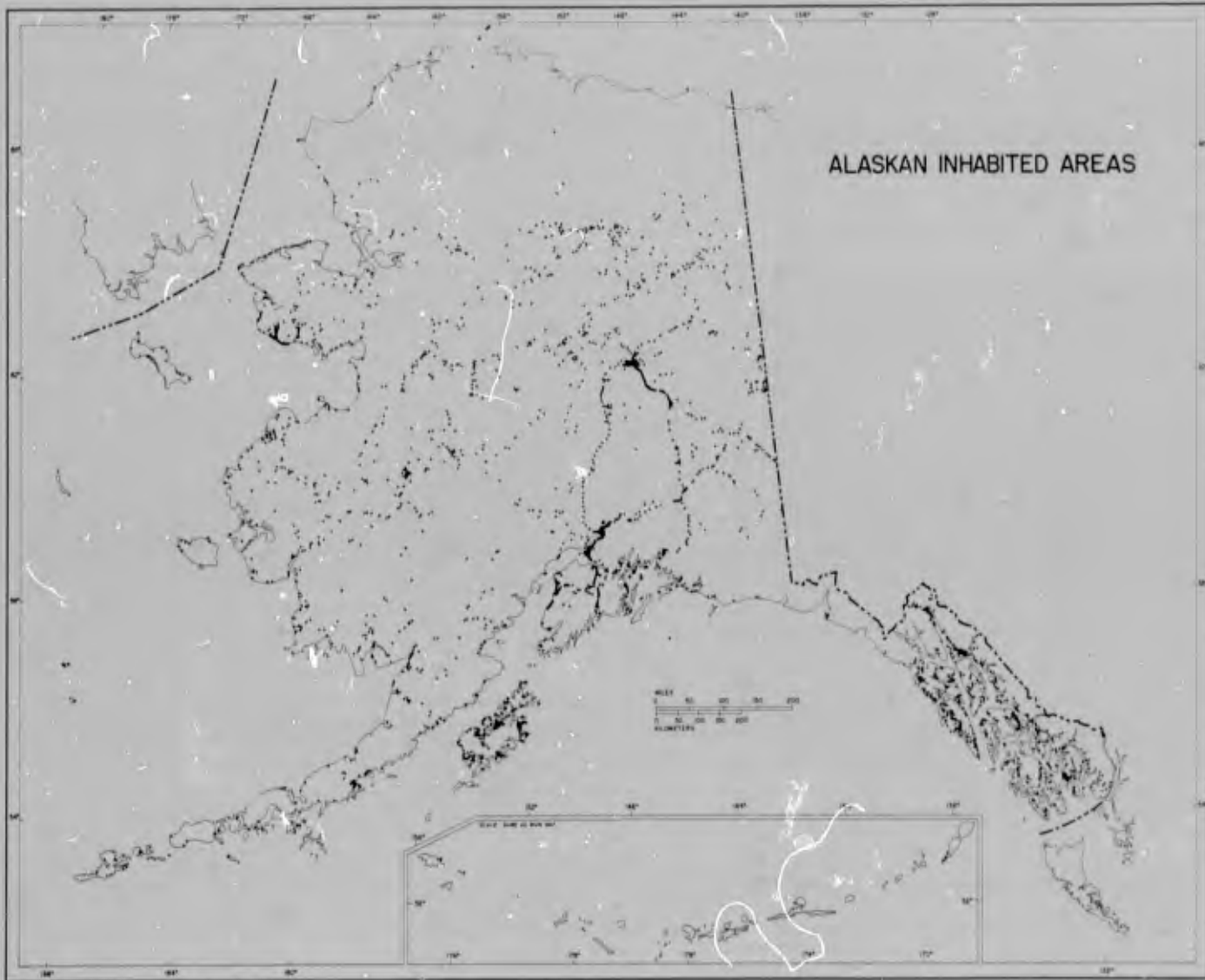


Fig. 10-1

or exceptional ones up to 75 miles in length.⁸ Elsewhere some spots are clustered, meaning two or three dwellings within three miles of one residence, and very occasionally these clusters were classed as grouped to signify that most houses are less than three miles from several neighbors and many others are only a little more than the arbitrary three miles from more than three other residences.

However, in no place in Alaska is the inhabited area so large as to be classed as either clusters of groups or interrupted areas. Nowhere is there a continuity of residences within three miles of each other in six major directions occurring in an area of at least a few hundred square miles. Such nearness does exist for small areas within a few miles of the bigger cities and in the Matanuska Valley⁹ but only three of these are really areal, rather than linear, in shape. The absence of this sheet-like pattern, and of the accessibility to be combined with it, means that not only is there no Continuous Settlement Region but also no Inner Fringe Zone. Nor is the former present at this scale on the adjacent western Canadian coast. (Fig. 9-1).

Railroads

Alaska has no inter-regional railroads although the possibility has been considered for decades.¹⁰ Instead, there are three lines for local traffic only (Fig. 10-2). These are about 500 miles apart and are short connections between the southern coast and an inland area. Most important is the Alaska Railroad, providing

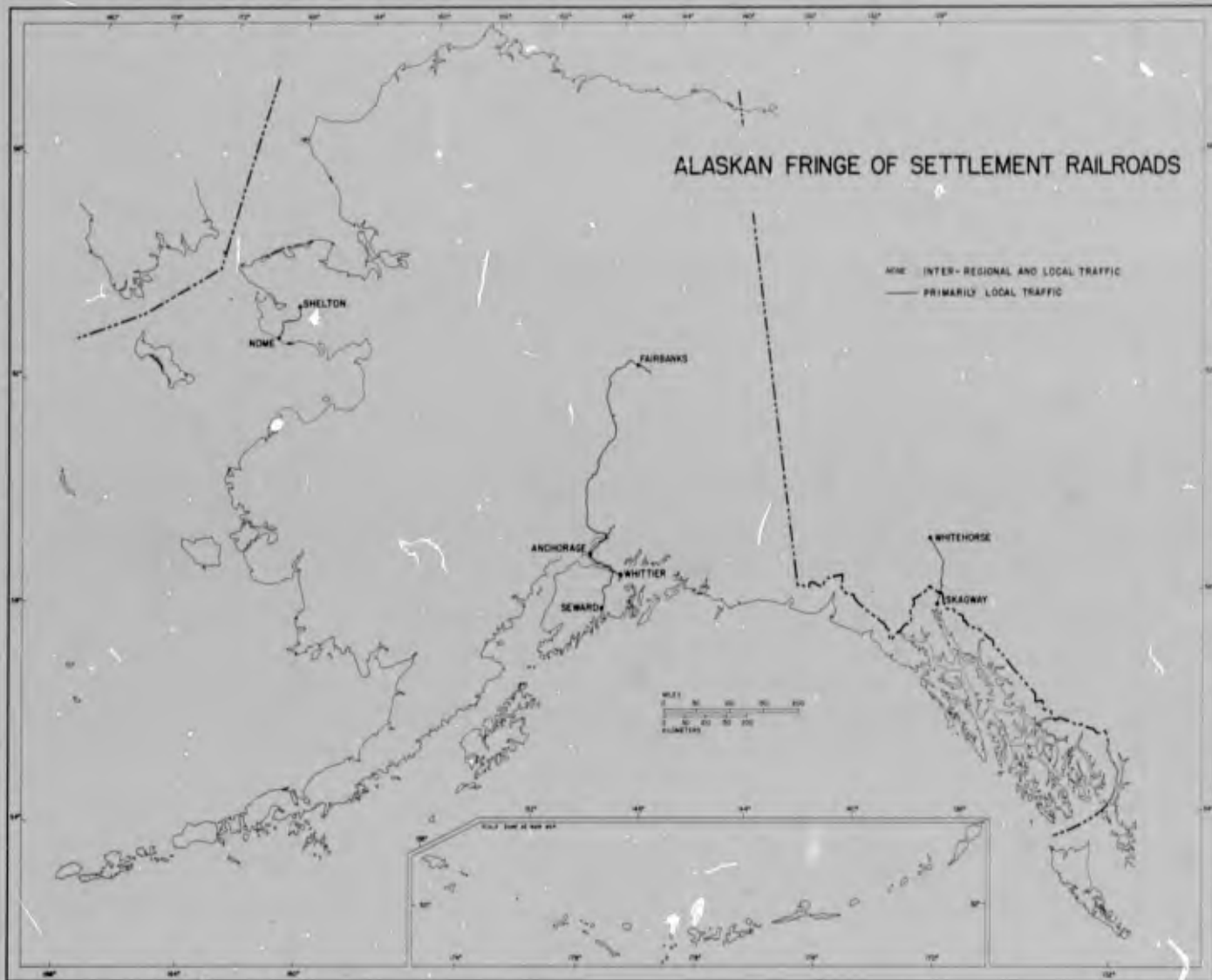


Fig. 10-2

scheduled daily freight and passenger service to local points between the ports of Seward and Whittier and Fairbanks. The other two lines are narrow and primarily for local freight traffic.

In general, most of the Alaskans having access by railroad are at the southern and northern ends of the Alaska Railroad.¹¹ Although it is modern and provides all-year bulk transport by scheduled runs the traffic is local. So most of the state is classed as in the more isolated parts of the Discontinuous Settlement region according to its rail access. But such is not the case for other forms of transport.

Roads

There is, for example, an open network of roads in the southeastern quarter of the main part of the state (Fig. 10-3). This includes two inter-regional roads meeting at Tok Junction, one connecting it with Anchorage and the other with Fairbanks.¹² From the junction it is about 1680 miles to Edmonton, Alberta and 2160 miles to Seattle. Most of the state's local traffic roads extend from or connect with these two routes. Elsewhere are several short, isolated roads, many of which are open only seasonally.

The significance of both types of roads shows in the distribution of inhabited areas (Fig. 10-1). Wherever there are roads of any length the pattern is linear. Additional linearity is likely with construction of many of the proposed new Alaskan roads because both old and new settlers will settle along them

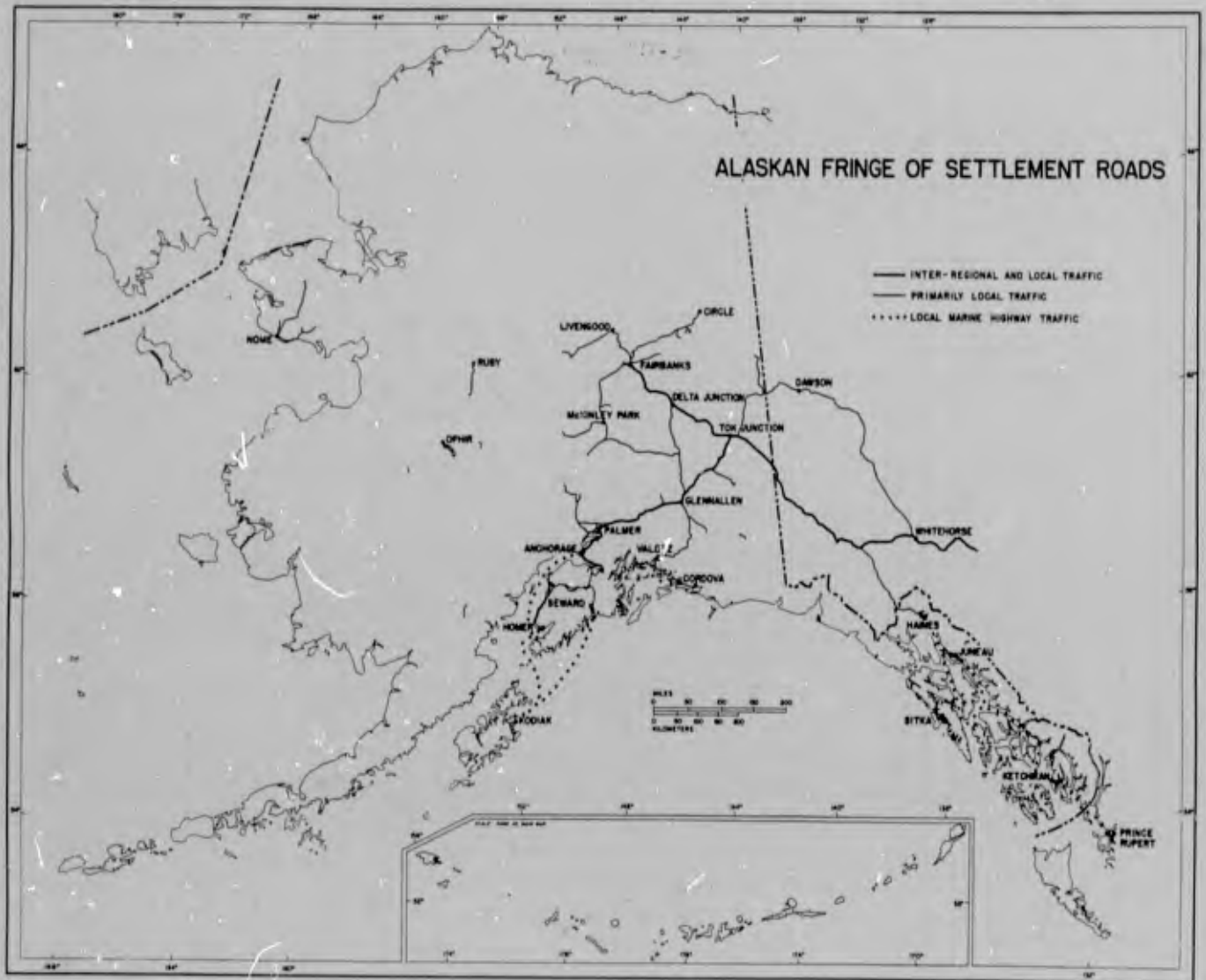


Fig. 10-3-

to attain local access.¹³ Local isolation is consciously recognized by and a common conversational topic of inhabitants of any Discontinuous Settlement region. Alaska is no exception. Its inhabitants realize that permanency of settlement is dependent upon as much multiplicity of transport as is obtainable.

Water Transport

Throughout most of Alaska's history, its primary inter-regional and much of its local transport was by water. Before World War II inter-regional lines connected the Pacific Northwest with Southeastern, South-Central, and, in summer, Western Alaska. Steamers plied the Yukon and Kuskokwim Rivers. So people congregated at coastal and river ports.

After World War II there were major changes. The oceanic-route monopoly was broken and new lines from the "South 48" and Japan were added, inter-regional passenger service by water was discontinued (except to Southeastern), and river steamers were retired.¹⁴ Now, there also is supplementary inter-regional service by air and road.

In local water transport there has been a recent increase. Three areas are now served by state-operated "marine highways", ferries which tie together the oceanic ends of Alaskan roads and some of the many islands (Fig. 10-3). In Southeastern the ferry is operated year-around and makes accessible the railheads of Prince Rupert, B. C. and Skagway. However, those in Prince William Sound and Cook Inlet are primarily summer-time connectors of roads.

Thus, present-day Alaskan water transport is two types,

inter-regional predominantly freight to the Pacific Northwest and Japan and local freight and passenger traffic. In Southeastern there is enough water transport, but not other types, to classify the area as Inner Fringe Zone while at a limited number of points elsewhere the use of water is dependent upon the presence of local roads, seasonal conditions, or both.

Air Transport

Transport by air supplements greatly the other Alaskan inter-regional and local routes. In fact, many parts of Alaska have more accessibility by air than is generally true for Worden.

Inter-regional movement is both intra-U. S. and international. The former is provided by four companies and international connections are by two or more summertime flights a week to Europe and the Far East on six airlines.¹⁵ Local traffic is handled by at least eight other lines providing daily or weekly flights to centers of population in all of Alaska's inhabited area.¹⁶ In addition, "bush" flights and movement by privately owned planes mean that many people with otherwise high local isolation have greater local accessibility than is apparent from the comparison of the maps of inhabited areas and other transport facilities. However, the actual accessibility is difficult to assess on an all-year basis because of variations in the skill of local pilots and in flying conditions.

Fringe of Settlement Zones

With these distributions of residences and these transport facilities, how does Alaska fit the measures of isolation?

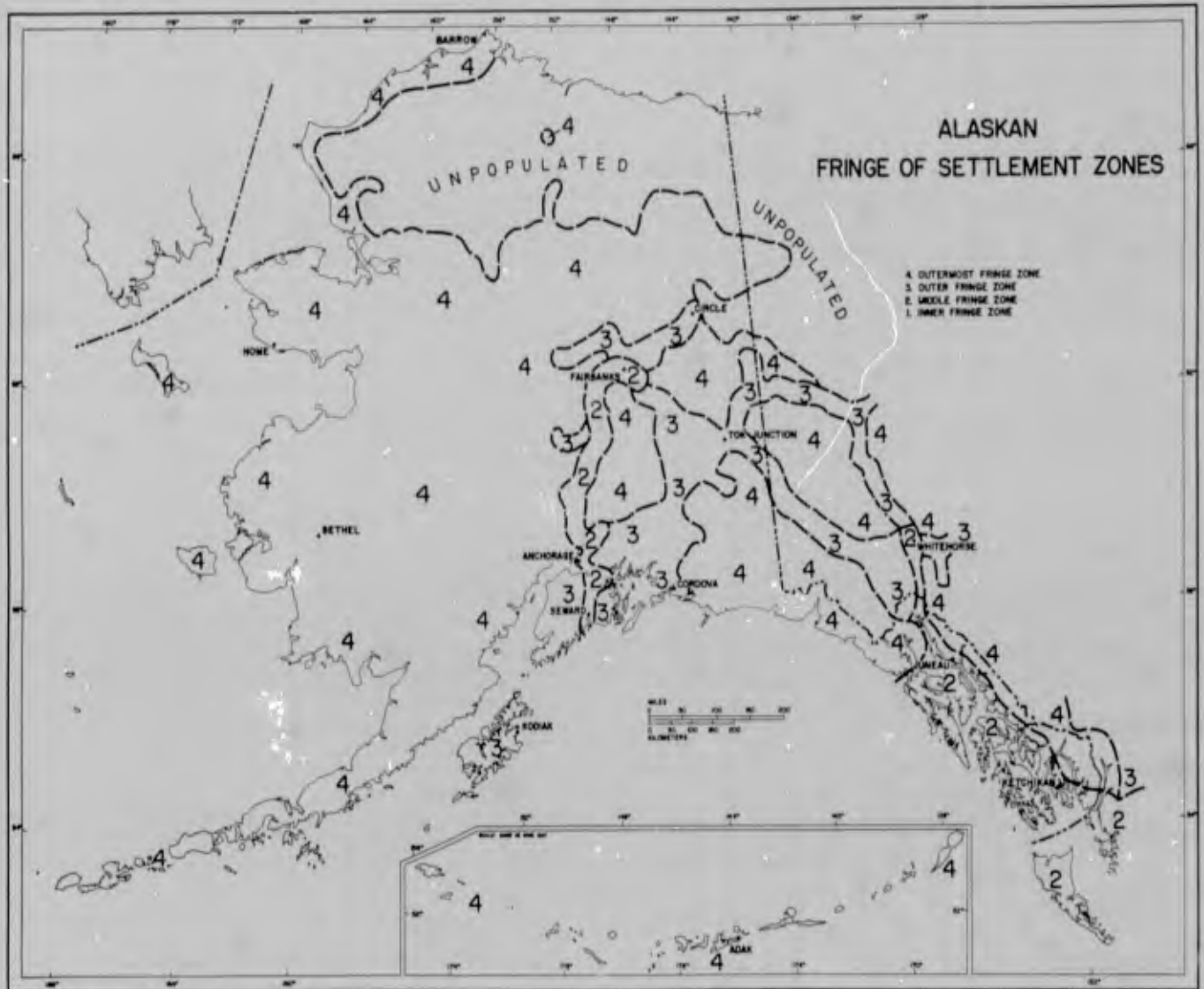


Fig. 10-4-

First, there is no region of Continuous Settlement; second, most of the state is a region of Discontinuous Settlement; third, an Unpopulated Region is present in an east-west belt in the North (Fig. 10-4).

In greater detail, the Discontinuous Settlement region is represented by only three fringe of settlement zones because there is no Inner Fringe Zone.

The two areas of Middle Fringe Zone are the southern two-thirds of Southeastern and the Alaska Railroad Belt. The former had a 1950-1960 population increase of 25.5 per cent and has the capitol, the state's two large pulp mills, and the recently-added ferry system. Yet, the residences there are distributed spottily, except four short lines, and the total access is such that many dwellings have a moderate to low degree of regional and-or local isolation, characteristic of a Middle Fringe Zone.

The Alaska Railroad Belt is similarly classified because of its combination of spotty-linear distribution of homes, two-directional and local railroad service, two-directional and either terminal-inter-regional or local-type road access, and multi-directional service by inter-regional and local air flights at primarily two points (Anchorage and Fairbanks). Much of the 1950-1960 population growth of 117 per cent in South Central and 113 per cent in the Interior took place in and around these two cities but there have been only local changes in distribution of population and in accessibility so that only on a large scale map would the immediate vicinity of Anchorage and possibly that of Fairbanks qualify as Inner Fringe Zone areas.

The Outer Fringe Zone is in three parts, mostly in South Central Alaska, with high regional and moderate local isolation (Fig. 10-4). One is Kodiak Island and the other two are at the sides of the southern end of the Railroad Belt. The island, however, would be subdivided on a larger scale map; the southwestern part would be Outermost Fringe while the northeastern would be Outer Fringe because of the weekly inter-regional air service and the local accessibility by roads, air transport, and the summer ferry.

West of the railroad is the western Kenai Peninsula. There dwellings are commonly in short lines and have been classified by Smith as dispersed widely, dispersed closely, grouped widely, or grouped closely.¹⁷ Their attachment is primarily to local-traffic roads, supplemented at two places by summer ferries and at three points by local air service. Construction of the pipeline to Anchorage and the proposed Turnagain Arm bridge ties or will tie the area more closely with Anchorage but probably would not be cause for reclassification of the area from Outer Fringe Zone.

The largest section of Outer Fringe Zone is east of the railroad and centered on Tok Junction. This is an area of spotty and short-line distributions of dwellings attached to the principal connected road system of Alaska. Although two of the highways are inter-regional this part of the zone is many hundreds of miles from a Continuous Settlement region and several of the other roads are open only seasonally. Also, the only supplemental access is by local air routes and a short summer-time marine highway between Valdez and Cordova. This area, like Kodiak Island, would be sub-

divided on a larger scale map and parts would be shown to have a still higher degree of isolation.

The Outermost Fringe Zone is Alaska's largest, covering more than half of the state. It is composed on the west of one large area of coastal and inland types, and, four smaller areas eastward, mostly inland types (Fig. 10-4). In all of them the dwellings are spottily distributed, or occasionally clustered, but many homes are several miles from the nearer ones in several directions and connected to them by only seasonally-usable trails or water bodies. In general, this zone is the most isolated of the inhabited world with no inter-regional transport and little or none of the local kinds.¹⁸ Yet, in these parts of Alaska there is some air service, seasonally or all-year and scheduled or unscheduled, to locally significant population centers as well as bush service outward from such places. On the west coast this is augmented during three or four months in summer by water transport. Thus, most of the zone's people have a very high regional isolation and a moderate to high local isolation. This characterizes a high percentage of Alaska's area but a low proportion of its people.

Significance of the Zones

As in Canada, the outlining of the fringe of settlement zones in Alaska draws attention to various needs and possibilities. These may be grouped into four units.

- 1) The measures of isolation continue to be applicable. Though the process is laborious the results lead to a comparability between continental areas not established heretofore.

2) The classification shows that within Alaska any new rural settling it wants is likely to have fewer difficulties in Southeastern and the Alaska Railroad Belt. The problems, however, are only relatively lesser than elsewhere in the state and may be compounded locally by such catastrophes as the earthquake of 1964, the flooding of 1967, or, equally difficult, the ill-organized settling attempt of 1959.

3) By the absence of an Inner Fringe Zone and in view of the lack of contiguity with the "South 48" the zonation emphasizes the desirability of focusing transportational improvements. These might be concentrated in the Middle Fringe Zone and immediately adjacent small areas of Outer Fringe where the land is potentially suitable for settling. Possible examples of the latter are the western Kenai Peninsula, southwest of Anchorage (where the rapid developing of a gas field and a sudden influx of flood refugees from the Fairbanks area threatens over-extension of settling), and, perhaps, the area southeast of Fairbanks.

4) There are now the possibilities of general guides for planning between Norden and this part of Nornam. Settling in Southeastern may be carried forward along the lines of recent development in the Middle Fringe Zones of Norway and Sweden. Similarly, Nordenic experiences are warnings of overenthusiasm about developing the Outer Fringe Zone and the Outermost, of which Alaska has so much. Beyond these general beacons there are now specific guides which either designate specific lines of possible action or research needs.

Footnotes

1. Much of this chapter was published in a provisional form as K. H. Stone, Geographical Characteristics of Alaskan Fringe of Settlement zones, Proceedings of the 16th Alaska Science Conference, 1965, pp. 246-263.
2. W. H. Hackett, Alaska's Vanishing Frontier, U. S. House of Representatives, Subcommittee on Territories and Insular Possessions, Washington, 1951; H.A. Johnson, Alaska and Its Potential for Economic Growth, Agri. Res. Serv., U. S. Department of Agriculture, Washington, 1959, (mimeo); H. Johnson and H. T. Jorgenson, The Land Resources of Alaska, New York, 1963; G. W. Rogers, The Future of Alaska, Baltimore, 1962; State of Alaska, Dept. of Natl. Res., Div. of Lands, Annual Report, 1963, Juneau, 1964; and U.S. Geological Survey, Mineral and Water Resources of Alaska, U.S. Senate, Committee on Interior and Insular Affairs, 88th Congress, 2nd Session, Washington, 1964.
3. G. W. Rogers, and R. A. Cooley, Alaska's Population and Economy, Juneau, March 1962, (mimeo.), v. 1, tables P-9 and P-45.
4. ibid., table P-41.
5. ibid., table P-14. For pre-1950 changes see K. H. Stone, Populating Alaska: The United States Phase; Geographical Review, v. 42, 1952, pp. 383-404 and I./B. Taeuber, The Population of the Forty-Ninth State, Population Index, v. 25, 1959, pp. 93-114.
6. The map of permanent dwellings was prepared on a 1/2,000,000 base from all available topographic maps, vertical and oblique air photos of tens of sample areas, and from field experiences of R.G. Smith, numerous cooperative Alaskans, and the author.
7. It must be remembered that the concept of nearness used in these measures of isolation refers to neighbors in several directions from any one settler, not just the nearest neighbor in only one direction.
8. A useful analysis of this linearity is presented in R. G. Smith, A Geography of Contemporary Settlement on the Western Kenai Peninsula, Alaska, University of Wisconsin, Ph.D. Dissertation, Madison, 1965.
9. K. H. Stone, Alaskan Group Settlement: The Matanuska Valley, U.S. Department of the Interior, Bureau of Land Management, Washington, 1950, passim.

10. (Batelle Memorial Institute), Transport Requirments for the Growth of Northwest North America, 87th Congress, 1st Session, House Document No. 176, 3 volumes, Washington, 1961. For previous studies of railroad (and road) routes to Alaska see especially Volume 1, pages B-1--B-6.
11. The line of dots on Figure 10-2 between Anchorage and Fairbanks shows primarily the homes of railroad maintenance employees rather than residents with primary occupations and being served by the railroad.
12. Very useful publications for research or travel on the Alaska Highway and the Alaskan road system are the annually revised booklets with road logs, such as, H. D. Barrow and S. H. L. Barrow (eds.), The Milepost, Juneau, 1965.
13. A major point in R. G. Smith, op. cit., is the great influence of planning for and construction of roads on the morphology of settlement in Alaska.
14. Some inter-regional passenger service has been continued by Military Transport Service but only for military personnel and some of their dependents.
15. Official Airline Guide, Chicago, v. 21, June, 1965, passim.
16. ibid.
17. R. G. Smith, op. cit.,
18. Most of the proposed new Alaskan roads extend westward from the Railroad Belt into the western Outermost Fringe Zone as shown in G. W. Rogers, The Future of Alaska, op. cit., Fig. 10 (p. 120).

Part V

POSSIBLE NORDENIC-NORNAMIC EXCHANGES
OF RURAL SETTLING PROCEDURES

Chapter 11

Summaries and Guides

The utility of a geographic study based upon the possible transfer of settling experiences, or processes, depends upon the acceptance of four ideas. These are that: 1) the areas are similar, 2) the measures used are significant in each area and are equally applicable, 3) geographic similarities and differences of regions and zones are recognized, and 4) prior experiences are used as guides rather than rigid curbs. In the previous chapters details were presented on the philosophy, methods, testing, and results of the study in individual political units; the latter were used because of the availability of source material and the differences of language by nation or state. Now the four concepts are summarized together in order to develop as much applicability of results as is possible.

General Nordenic and Nornamic Similarities

The general likenesses of Norden and Nornam are both physical and cultural. In total they are more significant to rural settling than the dissimilarities. And the analogies are many. Both, for example, are paired as higher latitude areas straddling the northern edges of the inhabited world. Each includes the northwestern corner of a continent. Total populations are 19-20 million each. The urbanized proportion of population is similar at 30-35 per cent. Literacy percentages of 97-99% are the same. Governments in both areas are basically quite democratic. Types of occupations are generally alike with emphasis on industrial growth which is

based on the development of similar local resources. Further, each of the seven nations or states averages about 3100 calories of food per capita daily and the gross national product per person in each is among the highest 14 countries in the world (although the Nordenic average is only 60 per cent of the Nornamic).

But there are differences. Nornam is about nine times bigger than Norden. Most of Norden is closer to major centers of supply and demand in the Continuous Settlement Region and by more and cheaper inter-regional connections. Nordenic settlement is the older by about eight centuries and its present population growth rate is only one-quarter to two-fifths of that in Nornam. Nornam's number of distinct races is greater than in Norden. The national languages and customs of the two are, of course, different. Further, Nordenic railroad and road densities per unit of area are from two to 15 times greater than in Nornam but the number of motor vehicles per capita in the latter is two to six times the number in Nordenic countries. And, in gross energy use Nornam's is about twice that of Norden while steel consumption in Nornam is 50 to 100 per cent greater than in Norden (except Sweden which equals Nornam). These general features show that transfers of settling experiences must, of course, be made with care. Still, the strength of similarity and the testing done to date show that much carry-over is feasible. This is especially true when attention is focused on comparability by way of degree of isolation.

Geographic Measures of Isolation

Geographic position in the Northern Lands is an element of major significance to its inhabitants. They recognize it without professional

instruction. It is clear to all that the more isolated people are the more dependent are neighbors upon each other. So the first measure of isolation here is of the availability of settlers for emergency or short-time aid to each other. It is assumed that people are available for such if dwellings are no more than three miles (5 km.) apart on a direct line and if the maximum time for travel on foot one way is one hour. The measure is, then, of how many major directions there are (to a maximum of six) in which neighbors are less than three miles from others so as to be able to help each other in an emergency or for part of a day. So considered, there are four principal patterns of distribution of people (and, therefore, of inhabited dwellings) designating significant differences in isolation. They are (and the number of major directions to neighbors less than three miles from any one settler): interrupted areas and clusters of groups (many near neighbors in at least six major directions), groups of clusters and short and long lines (near neighbors mostly in three to six directions), clusters of spots and occasional short lines (near neighbors in one to three directions), and spots (no neighbors near). In other words, the less areal and the more spotty the distribution of residences the less likely a settler can get emergency or short-time aid.

The second measure is of the location of the residences with respect to existing transport routes. Its major importance is as an index for the movement into an area of people and materials for new settling as well as the movement outward of settlers and their pro-

ducts. The index is the number of principal directions (to a maximum of four) a settler can go, within 10 to 20 miles (16 to 32 km.) of his house, on a kind of transport route. It is measured individually for railroads, roads, water routes, and air routes, and each is divided into inter-regional and local types. Some allowance is made for telephonic connections but not as much as could be.

General Fringe of Settlement Characteristics

Application of the measures of isolation discloses the same three regions in each area. However, in Nornam the Continuous Settlement Region is a smaller percentage of the total area, is more linear in shape, and is interrupted more than in Norden. In Nornam, also, the Discontinuous Settlement Region's zones have a more complex pattern and the region is several times larger than its Nordenic counterpart. Further, in Nornam the Unpopulated Region is represented by five widely distributed areas, each of which is several times larger than the one Nordenic occurrence in central Iceland.

Within the two Discontinuous Settlement Regions the four zones have differences which demonstrate how rural settling experiences in one area could be useful in another. In the Inner Fringe Zones, Norden has three parts, largely linear in shape and coastal in location, where recent rural settling has involved much local advance, a little local abandonment and a great deal of stability. By contrast, in Nornam are five such parts, three linear and two spot-like, bigger than in Norden, largely the inland type, and where there has been only some local advance by new settling in a zone of primarily stable settlement.

For the Middle Fringe Zone Norden has three linear and one spot-like sections which vary in size and are more the inland type than coastal. These compare with seven linear and one spot-like parts in Nornam with the same generalizations. However, with regard to the dynamics of settling, the Nordenic Middle Fringe has regional advance, local advance, stability, and regional retreat (nearly all the types possible) while the Nornamic is mostly regionally stable with a few places of local advance and of local retreat.

The Outer Fringe Zones are quite different. In Norden are two linear and three spot-like parts which vary in size and are both coastal and inland types but in Norden there are more than 20 sections, small to large in size, and almost all the inland type. The Nordenic parts include some local advance of settling but have mostly local retreat and weakening stability whereas the Nornamic sections are characterized by most stability and occasional local advance.

The Outermost Fringe Zones differ geographically. In Norden there are eight small occurrences (with none at all in Iceland) and each is an inland and mainland type. However, this zone in Nornam is very large in size and is composed of many parts, both large and small, and along coasts as well as inland. Still, both the Nordenic and Nornamic Outermost Zones might be characterized as largely stable, excepting recent military-oriented settlements in Nornam, if it is remembered that most of the zone's people are natives.

Rural Settling Guides

From the study at least 21 guides for rural settling may be recognized. Some are clearly single ideas, others are multiples and overlap. Several are designed for use in Nornam, some could as easily be applied in Norden, and most could be employed in much of the world. Scales of consideration vary and the order selected for presentation is roughly the chronology in preparing a plan for new rural settling.

1. New settling at the edges of the inhabited world is a natural and continuing action. It should not be considered exceptional. Present throughout history have been the attractions to nations of political, economic, or military advantages and to individuals of cheap land, potential increase of income, or greater freedom. Meanwhile, in the highly developed regions there have been the repelling forces of dense population, rigorous competition, and some economic maladjustment. All these forces probably will continue, possibly more slowly. Yet, continuance of new rural settling should be by selective processes determined from frequent analyses of what is happening throughout the world.

2. Initiation of settling should be based on positive considerations of the area to be occupied. Or, empty land should not be considered to be a place for the relief of a problem in occupied land. At present, consideration is being given to the significance of emigration and immigration to even out some of the disparities in world population densities.¹ Experiences in Norden and Nornam (as well as elsewhere) have made clear that settling should be done for the advantage of the area to be settled and not to relieve a problem else-

where; if the latter is the primary reason the result usually is only the geographic transfer (and often increase of intensity) of the initial issue.

3. New settling usually occurs where it is wanted. If a nation or state desires new occupants in an area it most often gets them by either positive or no action. That is, the government either encourages settling by grants or subsidies or it does not discourage it by taking official action against its occurrence. The latter, a passive form of approval, is the basis in some countries for the granting of squatter's rights to settlers who have not been evicted after a certain amount of time. So it is simply that new settling has been encouraged by nations at their fringes, either by sponsorship or unwritten permission.

4. If new rural settling is to be encouraged in Nornam it might best be limited geographically. Initial efforts could be directed to the proved parts of the Continuous Settlement Region. Then, within the region of Discontinuous Settlement success is more likely if that, also, is limited to individual or group settling in the better parts of the Inner Fringe Zone and secondarily, to only group settling in the best localities of the Middle Fringe Zone. The freedom to settle anywhere at all is an expense that few, if any, governments can afford to permit either now or in the future. One may learn from Sweden that it is easy to over-extend settling in the Middle Fringe Zone and even in the Inner Fringe--in parts of both the abandonment of agricultural-forestry units is now a major problem. Also, it is highly probable that in the Outer and Outermost Fringe Zones new settling should be severely restricted, if permitted at all.

In them only highly specialized uses of selected points, rather than areas, should be considered and these as a part of a multifunctional and long-term plan for non-military activities.

5. A degree of detailed locational planning little used as yet in Nornam probably is advisable. Simply permitting or encouraging settlement and providing some public services probably is not enough. To reduce the over-all costs of development is likely to require planning on the order of that in the Dutch polders where the locations of rural bus stops, individual farmsteads, specific buildings, types of villages, and certain service establishments are determined before construction starts. To be sure, this introduces an aspect of regimentation. However, all opportunities are usually accompanied by responsibilities and the complexities of new rural settling in the 20th century on less than the best land should be done with national and local community financial resources and requirements in mind as well as the permanence of the settlers.²

6. There should be a specialized, detailed plan for the timing of general and individual settling activities. In the past, the overall phases of the development of an area have been charted and often correctly. However, most contemporary new settling starts in a commercialized world where temporal organization is essential--products must be ready for scheduled transport and for a particular market at a certain time. Further, the timing of such details as the movement of the parts of each new settler's family to a new agricultural site requires study and careful action. In some parts of Norway and Finland it has been thought best for the farmer to spend

most of the first year on the new place alone. In others the whole family moved at the beginning and shared all the problems and inconveniences of starting everything at once. In Finland, for example, a family of six to ten people living for the first winter in a 10-by-12-foot building which is to be the sama certainly contributes to "togetherness"---but also to problems. It is doubtful that all the alternatives of detailed timeing are known, much less the answers, but experiences in Norden and elsewhere make it clear that settlers no longer can just follow their impulses.

7. The administration of rural settling usually is a governmental responsibility and a highly specialized task. Inasmuch as new settling is dependent upon governmental approval, usually involves public domain, and most often is on second- or third-grade land, a national or state government should be involved in detail. The long-time, large-investment, and high-personal-risk requirements are additional reasons for governmental involvement in order to protect itself and its citizens as well as to guarantee eventual increased gross national product from the settling. Further, the geographic, economic, sociologic, psychologic, engineering, political, and physical problems to be handled, amidst a constancy of change, require specially trained personnel operating with responsibility and over relatively long periods of time.³

8. Inventories of physical and cultural conditions and needs probably should be completed at least three years prior to first settling. This is essential if the data are to be used in the planning for the action. Further, physical and economic adjustments take time. If careful inventories are made early and used properly some possible

accomplishments might be: swamps turned into productive land economically, types of forests allocated so new settlers could have cash incomes in the early years, people all ready in an area of proposed new settling could be assimilated harmoniously, and there could be time for efficient construction of public utilities and provision of basic services. And, some of the waste of haste could be eliminated.

9. Basic inter-regional land routes should be established with the earliest of settling activities. In Nornam and Norden, if not in general, we are past the time of new settling for subsistence; people do not want it and there are less expensive and faster ways of caring for persons who might be involved in such. Land presently unsettled is so in part because of the scarcity or absence of connections to a Continuous Settlement Region. The start of new settling in these times is dependent upon heavy machinery and bulky materials; the profit motive which promotes viability is dependent on shipment of products out. Experience in Norden has shown that the presence of inter-regional routes will counteract some of the absence of local ones as well as other items usually acknowledged as requirements of modern settlers.

10. The selection of settlers should be considered the most important element, if there is to be only one. The people should be picked by an objective and complete procedure covering the physical, mental, financial, and moral qualities of both the individuals and family units as well as their initiative and experience.⁴ Selection should be primarily in terms of the area to which the settlers are going. Certainly, judgements of reliability (as of the Japanese in Latin America), of necessary experience (as in Finland), of financial

capability (as in the Netherlands), and of the many other personal and professional qualities needed (as in Australia and Israel) should be as carefully measured as are the blood strains in a herd of cattle, the annual production of a forest, the design of a house, and the spacing and size of drainage tile. The "human engineering" must exceed the civil and agricultural engineering. After all, settling is by and for the settlers.

11. Each specific area of new settling would profit from having one or more exemplary settlers. These could be carefully selected people who are living examples of what national and local officials might say should be done; they should not be government employees and they should not be subsidized by governmental equipment or financing. These local examples have been used in several places in the world, in addition to the Hattfjelldal area.

12. New settlers should have to move only short distances. Actually, it is likely that new settling will be based upon movements of people for distances of mostly 50 to 200 miles (80-320 km.) It may be anticipated that the few present long distance-immigrant areas of Canada, South America, Israel, and Australia are likely to have little or no new rural settling by such immigration in another ten years. Steps already taken in some of these countries and the experiences of primarily local movement in Norden show that in planning for Nornam's future it will be wise to be conservative geographically. By short distance moves the settlers will know their areas' physical and cultural conditions and the adjustments will be minimal. However, if there are to be long-distance movements they should take more time than previously and allow for training periods in the new area like those

used recently in Israel.⁵

13. The economy of a new settler probably ought to be based upon at least two occupations. This is partly so there will be a cash income in the first years of settling. More important, it is an adjustment to the use of more than one resource in an area where any one may not be sufficient to support a settler's family totally or every year. Even in the region of Continuous Settlement in Norden one finds numerous bi-occupational people, such as, farmer-foresters and farmer-fisherman, and there appears little reason to assume that new Nornamic settlement (or that anywhere else) should be based on a single occupation. For decades one characterization of a "pioneer" has been that he or she did many things for themselves. With more tools and more extensive communications now it is easier to be multi-occupational than it was previously.

14. Where new Nornamic settling is to be agricultural a fresh view of farm size and the contiguity of parcels may be useful. Farms there might be 500 to 600 acres large and made up of several separate parcels. Persons with sentimental feelings for American homesteading acts and their limits of 160 and 320 acres will be dismayed by this--but so would Nordenic, Israeli, and some Dutch farmers whose area is based on the quality of the land and the amount of that quality which is necessary to support a family. Further, although it may seem geographically sacrilegious to suggest that a farm in Nornam be composed of five or more different parcels the experiences of thousands of Finns have shown that such parcelization is one way of effectively evening out the random distribution of varying-quality forests, swamps, and moraines.

15. The settlers' initial investments of time and money need to be quite carefully managed. Unqualified giving of materials, aid, or credit have to be controlled skillfully and probably on an individual basis. However it is done, the settlers ought to be included in decisions so as to feel the investments are reasonable in amount, effective economically, and--most of all--theirs from the beginning. Experimentation with and the study of how this phase of new settling has been handled elsewhere are high priority needs at present.

16. Consideration should be given to the use of an initial test period. This might be from two to five years long as employed in several places in the world. The period should be thought of as a testing of at least three things: first, the land to support the settlers by the occupations planned, second, the settlers to adjust to the area, and third, the government of the area to adjust to the new conditions.

17. Provision for ownership of the land should be clear to the settlers and timed carefully. Existing laws which may restrict use or possession will need examination and possible revision. Most settlers in Norden and Nornam assume that private ownership will be attained but it need not be automatic or immediate.⁶

18. Planners and administrators of new settling in Nornam might consider more strict requirements with respect to settler's repayments than has been the tendency in recent years. The general trend, especially under the more socialized governments, has been to grant more and more subsidy and to be less demanding about repayments (perhaps because they want the settlers badly and realize that the areas involved are not first class in every respect). Experiences in some

of the Nordenic countries where grants have been low and requirements of repayment of loans high indicate that this has led to an apparent high degree of financial responsibility and, possibly, greater permanence of settlement.

19. Special arrangements might well be made for two local groups of people in an area of settling. Namely, any settlers already present and any new settlers who appear to be unsuccessful. These are similar in that each is not a member of the new settling group. In the case of the former experiences have shown that it is advisable to take steps to elicit their friendship and aid by including them in programs of assistance set up originally for the new settlers (these older settlers may, in fact, need help as badly and, certainly, they may have a larger stake in the area's future).⁷ For those of the new group who somehow fall out of favor there should be provisions to move them out or offer alternatives for a new start early because of the seriousness of any discontent in the early phases of new settling.

20. An area of new settling should be expected to take at least 20 to 30 years to begin to mature economically, sociologically, psychologically, and politically. This means that few governments can or should consider a colonizing effort as a politically advantageous move (unless, of course, they can guarantee their longevity so long). The first three in the new effort, though, are the most critical to the individual settlers (the time of introduction and nursing); after one is through this there is a longer second phase of refinement of occupations, consolidation of gains, and development of regular growth. Then a settler may be able to look

beyond immediate requirements and contribute to community life. And, of course, major progress towards permanence of settlement is made when the children of the original settlers take over, especially when they develop the area further and participate in its government. But all of this takes time. The process of settling should be considered as a long-term investment--first in the settlers and second in the area involved. Permanence can hardly be gained by speed--people take time to grow in an area just as other organisms do.

21. Any new settling is experimentation, no matter where or when. Thus, there is no project free of errors and only the practice of settling certain persons in an area at a given time can show which settling processes are more suitable. The number of variables is too great for any series of processes to be anticipated perfectly but it is equally true that the complexities are not so great but that the permanence of new settling can be more certainly attained by some processes than others.

These general guides are the results of initial considerations of Norden and Nornam after mapping with the suggested measures of isolation and in combination with the study of rural settling elsewhere. Other general guides are considered minor, only partially transferable, or incomplete. But additions may be expected, all to be added to the existing suggestions of Sir Bernard O. Binns, Prof. A. Maughini, and specialists working for or with the Intergovernmental

Committee for European Migration.⁸ Still, all too little effort is being spent on analyzing the contemporary processes of new rural settling in all parts of the world.

In retrospect it may seem that there has been little progress in developing the "science of settlement" Bowman suggested as necessary in 1926. However, we do know that any settling in the mid-20th century is complex, made more so in specific areas by national desires and international and national trends. And these are dynamic. So we recognize that a universal set of rules for settling probably is unattainable. Still, comparative geographic study discloses clear signs of repeating patterns in the process of new rural settling in the free world's Northern Lands, and in other areas as well. With this encouragement and with the realization that new rural settling is a natural and continuing force we can but continue the search for guides because counsel is so sorely needed in this phase of initiating permanent man-land relationships.

Footnotes

1. D. H. Hofmeijer, On Anticipating the Future, International Migration, v. IV, 1966, pp. 156-163.
2. B. H. Binns, Land Settlement for Agriculture, Foreign Agriculture Development Paper No. 9, Rome, 1951; D. Christodoulou, Land Settlement: Some Oft-Neglected Issues, Monthly Bulletin of Agricultural Economics and Statistics, v. 14, 1965, pp. 1-6; A. K. Constandse, The Cultural Influence of Government Agencies on New Rural Settlement, International Migration, v. II, 1964, pp. 269-274; J. Isaacs, The Economics of Migration, London, 1947, passim;
3. Binns, op. cit.; Christodoulou, op. cit.; Constandse, pp. cit.
4. International Committee for European Migration, Information Document on Land Settlement, MC/INF/34, Geneva, 5 Sept. 1956, p. 68.; J. D. Black, Theories of Land Settlement, National Real Estate Journal, v. XXI, 1920, pp. 5-9; E. Kramer, Land Settlement Technique Abroad (III, On the Selection of Settlers), Land Policy Circular, Supplement, U. S. Resettlement Administration, 1935, Washington, passim.
5. J. W. Eaton, Jewish Agricultural Colonization in Palestine: A Sociological Experiment in Collectivism, Rural Sociology, v. V, 1940, pp. 327-344; A. Eli-av, Agricultural Colonization in Israel, Journal of Agricultural Economics, v. XI, 1954, pp. 48-68; United Nations, F.A.O., Report of the Study Group on Problems of Individual and Group Settlement for the European Region, Rome, 1956, pp. 34-46 and 52-53.
6. Binns, op. cit.; Christodoulou, op. cit., p. 3.
7. Isaac, op. cit., pp. 154-155.
8. Only a few individuals and international agencies have maintained in recent years an interest in planning for new rural settling and have published some of their compiled data. Examples are: Binns, B. O., Land Settlement for Agriculture, Foreign Agriculture Development Paper No. 9, Rome, 1951; Research Group for European Migration Problems, The Possibilities of Land Settlement in Planned Migration, A Preliminary Report, The Hague, 31 July 1953, 4 volumes, mimeo.; Maughini, A., General Remarks on Land Settlement in Overseas Countries, in Intergovernmental Committee for European Migration, Final Considerations and Suggestions, LSF/12/Rev. 2, Geneva, 12 October 1953, mimeo.; Intergovernmental Committee for European Migration, Preliminary Draft of the Report of the Director on Land Settlement, MICEM/39/55, Geneva, 14 October 1955, mimeo.; Intergovernmental Committee for European Migration, Report of the Director on Land Settlement, MC/203, Geneva, 30 August 1956, mimeo., especially part III; Z. Piore, An Ecological Interpretation of Settlement Systems, International Social Science Journal, v. 18, 1966, pp. 527-538.

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13. ABSTRACT We may assume that there will always be interest in new rural settling at the edges of the inhabited world. The amount of interest and activity at any one area depends on the attitude and needs of the national government of that area. If new settling is to be permitted or sponsored, guides for it will be sorely needed to temper the emotional feelings which often prompt and accompany the occupying of "new land". One example of how some guides may be obtained is provided by comparative study of the fringe of settlement zones in Norden (Scandinavia and Finland) and Normam (Northern North America). Some conclusions from it are: 1) the fringe of settlement zones delineated in Norden and Normam are comparable so the transfer of settling experiences between similar zones is a useful technique to develop some of the guides, 2) delineation of the zones is based on measures of isolation which are significant elements in planning for present-day new rural settling but which might be revised to reduce the labor of application and to make the measures more complete, especially in Latin America, 3) if new rural settling is to take place the Inner Fringe Zone should be considered in detail first and the Middle Fringe Zone second, 4) if there is interest in the process of settling, probably the most productive place to study is the boundary between the Inner and Middle Fringe Zones, 5) existing settlements in the Outer and Outermost Fringe Zones should be assessed or reassessed to determine their national, regional and local values so as to decide if even present-day settlers should be encouraged to stay, and 6) there is need to extend this type of study to the other margins of the inhabited world to prevent overextension and excess expense.			

KEY WORDS

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Settlement
Settling
High latitude
Subarctic
Population
Development
Abandoning
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Sweden
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