# COMMUTING TO PALMERSTON NORTH

## AN EXAMINATION OF SOME ASPECTS OF THE JOURNEY TO WORK IN THE PALMERSTON NORTH URBAN AREA.

A Thesis Presented in Partial Fulfilment of the Requirements for the Degree of Master of Arts in Geography at Massey University.

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# PREFACE

While this study could have been undertaken by another whose competence was in some other field, it is offered in the hope that the geographer's point of view may illuminate an area of knowledge about the Manawatu of which we were formerly ignorant. It is offered, too, in the hope of making a contribution, however meagre, to the literature which is available on the local area.

At the outset of the study it was the intention to enumerate commuters in terms of origin areas, the sole destination considered being the Palmerston North Urban Area. The inflow of commuters to the major employment centre in the Manawatu was the main consideration but it was expected that commuting might shed some light upon the distribution of population in the district. It was felt that the existence of an urban hierarchy, formulated on the basis of population size and urban function might well be the result of forces operating both in the settlements and within the area as a whole. Changes within the hierarchy could then be viewed as resulting from alterations of the forces. It was considered that commuting, as it is currently operating, was having an effect upon the Manawatu hierarchy and that settlement patterns were possibly being stabilised or reinforced by the existence of commuting. In this way the examination of commuting as a phenomenon taking place within a changing hierarchy became an important aim and some attempt was made to equate

changes in the hierarchy with commuting patterns.

A study similar to this undertaken at some future time would test the accuracy of some assumptions made here. The imposition of new, and at present unforeseen, forces could well alter the trend which is currently emergent and a further study could point up the development or decline of current changes in the urban hierarchy, and commuting as a factor in those changes.

Some research could be undertaken, too, to study the relationship which may exist between settlement size and the involvement of the population in the social and cultural activities available to them. While economic function is related to population size, little is known about the possible relations between social function and settlement size. A regional study could well embrace an analysis of commuting in the Manawatu from an origin and destination basis so that some assessment might be made of the extent to which the inter-area journey to work is a factor in the continued existence of some settlements.

In order to prosecute the study a survey was made of all known employers in the Urban Area and although no guarantee can be given that this survey was entirely complete, reference to current figures on employment in the Urban Area, as compiled by the Departments of Labour and Statistics, indicates that a coverage approaching 100 per cent may be safely assumed. During this survey some 1,742 contacts were made, and a list was made

of such names and addresses of commuters as could be obtained. Interviews were then conducted with commuters in their homes and in all 445 satisfactory interviews were completed, (See Appendix A.)

In conjunction with the home interviews checks were made in the settlements of the numbers of functions performed in each after lists had been compiled from the Universal Business Directory so that a simple hierarchial arrangement of settlements could be made. This appears in Chapter Five.

While the techniques used in gathering data proved effective in assessing the total position with regard to the numbers of commuters, the time involved in the survey work renders the data less accurate than it would necessarily be if the survey work could have been compressed into a shorter time. Some sixteen months of survey work were undertaken in the course of this study and during this time changes unknown to the author could well have taken place. Where changes were known to have occurred compensation was made so that the number of commuters and the location of their workplaces is considered to be as accurate as is possible under the circumstances in which the survey was carried out.

ACKNOWLEDGEMENTS

Without the ready help and assistance of a large number of people, this study could not have been completed. I take

this opportunity to extend my thanks to all those who have been of assistance for their generosity. In particular I wish to acknowledge and thank Professor K.W. Thomson and Mr. B.G.R. Saunders for the encouragement and inspiration which they have been as my teachers and supervisors in this venture. They, together with the staff of the geography department of Massey University, have given me an appreciation of geography as an academic discipline.

I could have done very little, however, without the generous and ready assistance of the employers of the Palmerston North Urban Area who, almost without exception, offered help and advice in a most ready manner, and without the generous co-operation of those commuters who submitted to my questioning I should have learnt very little.

I am grateful, too, to Miss Nola Gordon and the staff of the Computer Unit, Massey University, whose help and courtesy were of great assistance in overcoming the diffidence felt in dealing with the data through the medium of the computer. I extend my thanks, too, to Miss Aileen Claridge, formerly of Massey University Library, who located references in obscure places, Mr. P. Crawford of the Town Planning Office, Palmerston North City Council, for his patient coaching in statistical techniques and Mr. B.R. Greenslade, J. Wattie Canneries, Hastings, for his valuable advice on the economic issues encountered in

the study.

The time and assistance offered by many service clubs and organisations in the Manawatu was of help in locating many commuters. I am grateful too, to Mr. Ken Swainson and Mr. Noel Hammonds of Feilding whose local knowledge proved valuable.

I am indebted, most particularly, to the Palmerston North City Council for its generosity and to Mr. K. Nairn and the staff of the Town Planning Office. I should like to thank, too, Mrs. Ruth Gracie, my typist, and Mr. Murray McKenzie who duplicated the thesis.

Without the encouragement and patience of my wife, however, I could have achieved nothing.

TABLE OF CONTENTS

LIST OF TABLES

# LIST OF FIGURES

# INTRODUCTION

The daily, interurban movement of workers between home and work has implications for population distribution, urban function and the status of settlement within an urban hierarchy. Inter-urban commuting is one aspect of the complex of relationships which operate between urban settlements, the intervening rural areas and the major employment centre and is a reflection of the employment opportunities offered within the commuting region. In this thesis it is proposed to examine the emergence and development of commuting in the Manawatu, to discuss its present status and to assess, as far as possible, the effects which commuting is likely to have upon population and settlement.

The three factors of environment, economy and technology played a major role in the establishment and development of both the settlement pattern of the Manawatu and the urban hierarchy which was imposed upon that pattern. Initially, villages were established in response to the isolation imposed by the bush and the pattern which arose at that time has prevailed with little modification to the present. Changes within the three factors, however, modified the hierarchical order which emerged. The removal of the bush allowed easier communications, the economy became fully market orientated rather than semi-subsistence and technological innovation released manpower from pastoral occupations and from work associated with farming.

The reduction of occupational opportunity was met,

initially, by migration to areas where work was available but the increased mobility which the motor car allowed and which had played a role in the reduction of work opportunities, now became the means of permitting residence in an area other than that in which work was available and led to the emergence of commuting as an acceptable alternative to migration.

At present commuting is accepted by over five per cent of the total workforce of the Palmerston North Urban Area and this proportion is thought to be increasing. For commuters the Urban Area offers security of employment and equitable wages while the smaller centres and rural areas offer attractive residential sites. Although expensive, transport is readily available and presents no difficulty to the commuter.

The continuation of commuting and the possible expansion of the number of commuters could be reflected in the emergence of settlements of dormitory status. As the dormitory function replaces former functions some changes in the areal distribution of population might be expected. The centres closer to the city could gain population while the decline suffered in others might be halted or, perhaps, reversed.

## THE LITERATURE

The journey to work has engaged the attention of many workers in various fields and a growing body of literature has appeared from the pens of demographers, ecologists, economists,

civil defence authorities, labour market analysts and planners [1] as well as geographers since Liepmann completed the first major study in 1944. [2] These works have concentrated, according to the disciplinary interest of their authors, on various social, economic and psychological aspects of the movement of workers to their places of work irrespective of the length of their work trip, commuting being defined as, "the daily trip to and from work from a residence sufficiently distant so that some form of transportation other than walking is involved". [3]

Hunter and Reid (1968) have discussed the relationship between commuting and mobility, (including geographical mobility) over varying distances, occupational mobility and the problems accruing from such mobility. Hawley (1950), however, describes the journey to work as a measure of the influence of the city on its surrounding area, showing that the influence and the number of commuters decrease with increasing distance from the city centre.

The socio-economic groupings of workers in relation to the distance travelled has been examined by Duncan (1955) and by Reeder (1956), while Goldstein and Mayer (1964), who include a brief and succinct outline of the rise of commuting, have studied commuting in relation to migration. Carroll (1952) has shown that adjustments may be made by commuters in reducing the distance travelled between home and work by moving residence or by changing occupation, and the factors involved in such adjustments,

and Holmes (1968) has examined aspects of commuting in Australia in relation to migration in that country.

These studies have concentrated largely upon the destination area showing commuting in relationship to the work place, but Humphrys (1962) has examined the economic importance of commuters to their places of residence showing that, "commuters who travel to work to sell their labour beyond ... the area in which they reside, are income earners for that area". [4]

While the great majority of works so far produced have been by West European and North American authors, contributions to the literature have been made by Australasians and in New Zealand an increasing volume of reports, articles and theses on the journey to work is appearing. In addition to those transportation studies undertaken by local authorities in this country the work of Dahms (1966) should be mentioned. [5] This major study undertakes to relate the journey to work in Metropolitan Auckland to past patterns of communications, so largely influenced by the physical configuration of the land, and to the present existing structure of the urban community. Solly (1955) related passenger transport and commuting to the overall problems of passenger transportation in the Metropolitan Planning Area of Auckland. An examination of North Shore, as a dormitory suburb for Auckland workers was undertaken by Conacher (1964), while Robertson (1963) studied the journey to work in Wellington, and in his description and evaluation of the position as it pertains

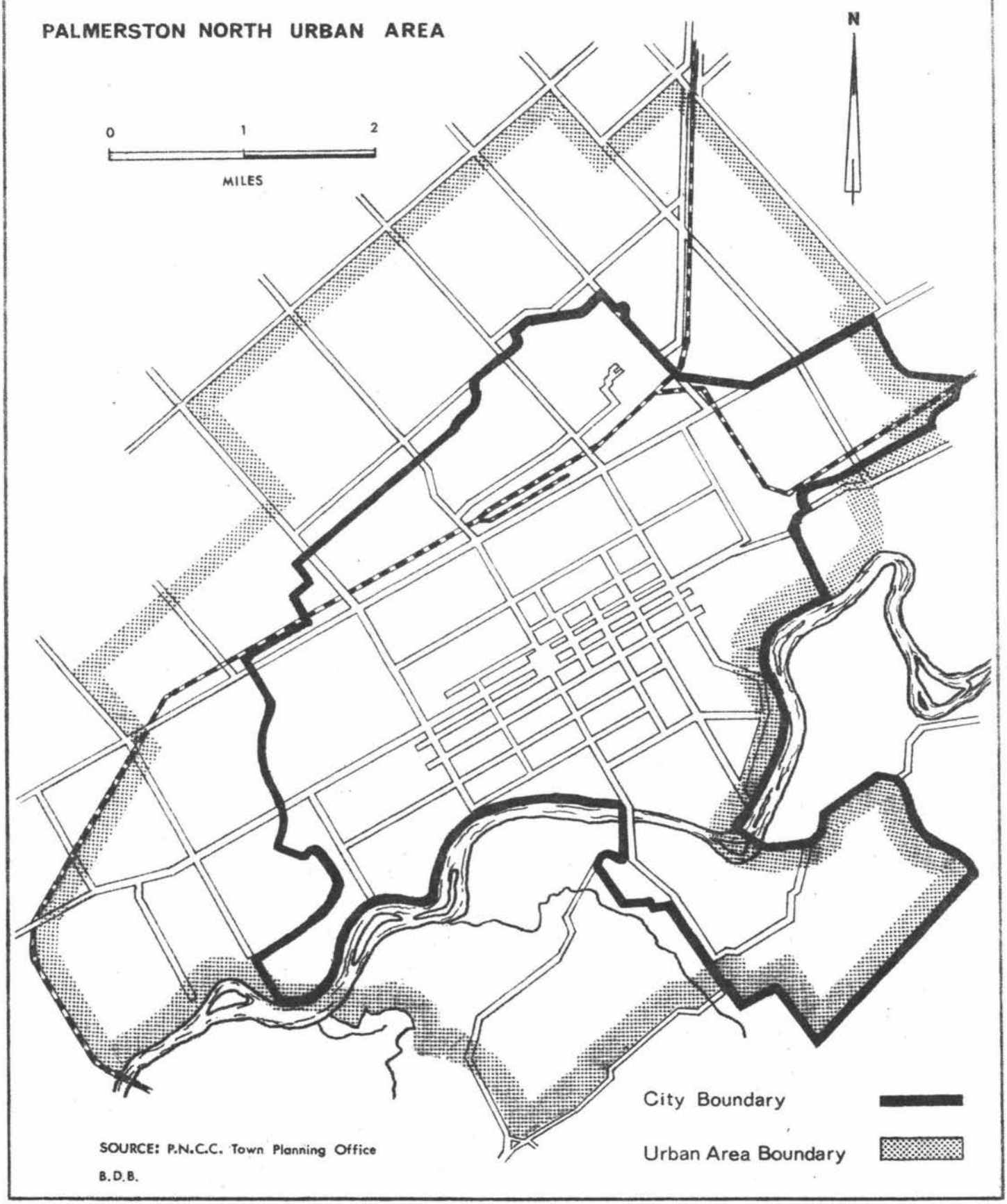
to that city, has shown that the physical site of the city accounts for many of the problems which arise in the movement of workers from their dormitory suburbs into the city.

These works have concentrated upon the journey to work in its entirety covering the total work force of a settlement area, usually by sample, but in this present project only a section of the Palmerston North Urban Area's workforce has been studied. Since the aim here is to examine the relationships between settlements in terms of the urban hierarchy only those workers who lived beyond Palmerston North City or Urban Area have been included. "Urban hierarchy" here is taken to mean the arrangement of urban settlements in a hierarchical order based upon the factors of urban function and population size.

For city workers the boundary limiting the destination area was taken as the Palmerston North City boundary as defined by the Palmerston North City Council and gazetted on 30 August, 1967 while for workers in the agricultural zone [6] the boundary limiting that destination area was the Palmerston North Urban Area boundary as defined by the Statistics Department and used in the general census of 1966, (See Fig 1). [7]

The decision to limit the study to commuters crossing either of the boundaries as given was an arbitrary one suggested by the nature of the study. It has given rise to some anomalies with respect to the length of work trip undertaken by some

FIGURE 1


PALMERSTON NORTH URBAN AREA
N
0
1
2
MILES
City Boundary
Urban Area Boundary
SOURCE: P.N.C.C. Town Planning Office
B.D.B.

workers. In some cases workers commuting across the respective boundaries had shorter trips than some city workers whose daily trip may be up to five miles one way.

The intention to relate commuting to settlement patterns has led to the division of the work into six chapters. In Chapter 1 the development of commuting in the Manawatu is traced against the background of the development of the settlement pattern and the urban hierarchy. The origins of commuters are discussed in Chapter 2 together with the reasons given by commuters for travel and their choice of residential location. Some observations are made here on commuting and marriage, migration and the dormitory functions of settlements. In Chapter 3, the destination areas of commuters are discussed in terms of the work types available and the percentages employed in various sections of the city and urban area. Transport as applied to commuting is examined in Chapter 4. Communications and the availability of transport were vital in the emergence of commuting and the continuation and extension of commuting depends upon the continued availability of transport. In Chapter 5 a simple hierarchical order for Manawatu settlements has been formulated on the basis of urban function and population size, and commuting has been related to this hierarchical order. Chapter 6 consists of conclusions drawn from the foregoing work.

FOOTNOTES

1. Schnore, 1960, 8.

2. Dr. Liepmann's study, The Journey to Work, was published shortly before the period of general interest in the subject which was occasioned by the physical reconstruction rendered necessary by the wartime bombing of Great Britain.

3. Foley, 1954, 322.

4. Humphrys, 1962, 73.

5. Transportation studies have been conducted by the following New Zealand local authorities,

   i. The Northland Regional Planning Authority.
   ii. The Auckland Regional Planning Authority.
   iii. The Hamilton City Council.
   iv. The Palmerston North City Council.
   v. The Wellington City Corporation.
   vi. The Christchurch Regional Planning Authority.
   vii. The Dunedin City Council.

6. For the purposes of the study the Palmerston North Urban Area was divided into four destination zones. These are defined in Chapter 3. The Agricultural Zone referred to here is the area lying between the city boundary and the Palmerston North Urban Area boundary as devised by the Statistics Department.

7. The Palmerston North City boundary was defined and gazetted

on 1 September, 1967, (N.Z. Gazette, 1967 No 54, 1453) and amendments to the definition were gazetted on 30 August, 1967, (N.Z. Gazette, 1968, No 13, 378).

# CHAPTER 1.

## THE FORCES LEADING TO COMMUTING IN THE PALMERSTON NORTH AREA.

Basically, commuting in the Manawatu is a response to the lack of work opportunities in the city's hinterland. The five reasons which Anderson distinguished as being basic to the growth of the city, are, in a measure, the factors behind the decline in work opportunities in the rural areas and small settlements, and as a consequence, are the factors which have given rise to three phenomena, change of occupation, migration, and commuting. [1]

Changes in occupation may be accomplished only where alternative work is available. Occupational changes may be necessitated by advancing age or by promotion as well as the closure of work places, and the mobility which occupational change implies is more common to youth than to mature workers and to the unskilled rather than those whose occupations are either skilled or professional in nature. Often in the Manawatu the reduction in occupational opportunity has been general rather than in specific occupations and, since no alternative work was available near home, workers have chosen either to migrate or to commute.

Migration as a means of overcoming the reduction in work opportunities would seem to have been a potent factor in urban growth in the Manawatu. Migration involves money costs and

psychological - sociological costs. The former include the expenditure involved in purchasing a house in the destination area to replace housing in the area of origin, the costs of actually physically moving household effects from one place to another, and the possibility of paying higher rates or rent where the house is not owned by the migrant. Among the psychological and sociological costs are the upset in routine, loss of one's immediate circule of friends and loss of attachment to environment or community. While both types of costs are important in the decision to migrate, the intangible costs are more difficult to conceive and allow for. It is, thus, the psychological and sociological costs of migration which operate more effectively against migration.

A feature of the population growth of New Zealand has been the increase of the urban population at the expense of the rural areas. (See Table I, Appendix D). This increase in the urban centres has been due more to migration than to natural causes. In the Manawatu much of the population growth has been in the larger urban centres at the expense of both the rural areas and some of the smaller settlements. (See Tables II and III, Appendix D). Migration has been responsible for much of this differential growth and has been examined with respect to the Manawatu by Moore (1968).

The third means of overcoming a lack of occupational

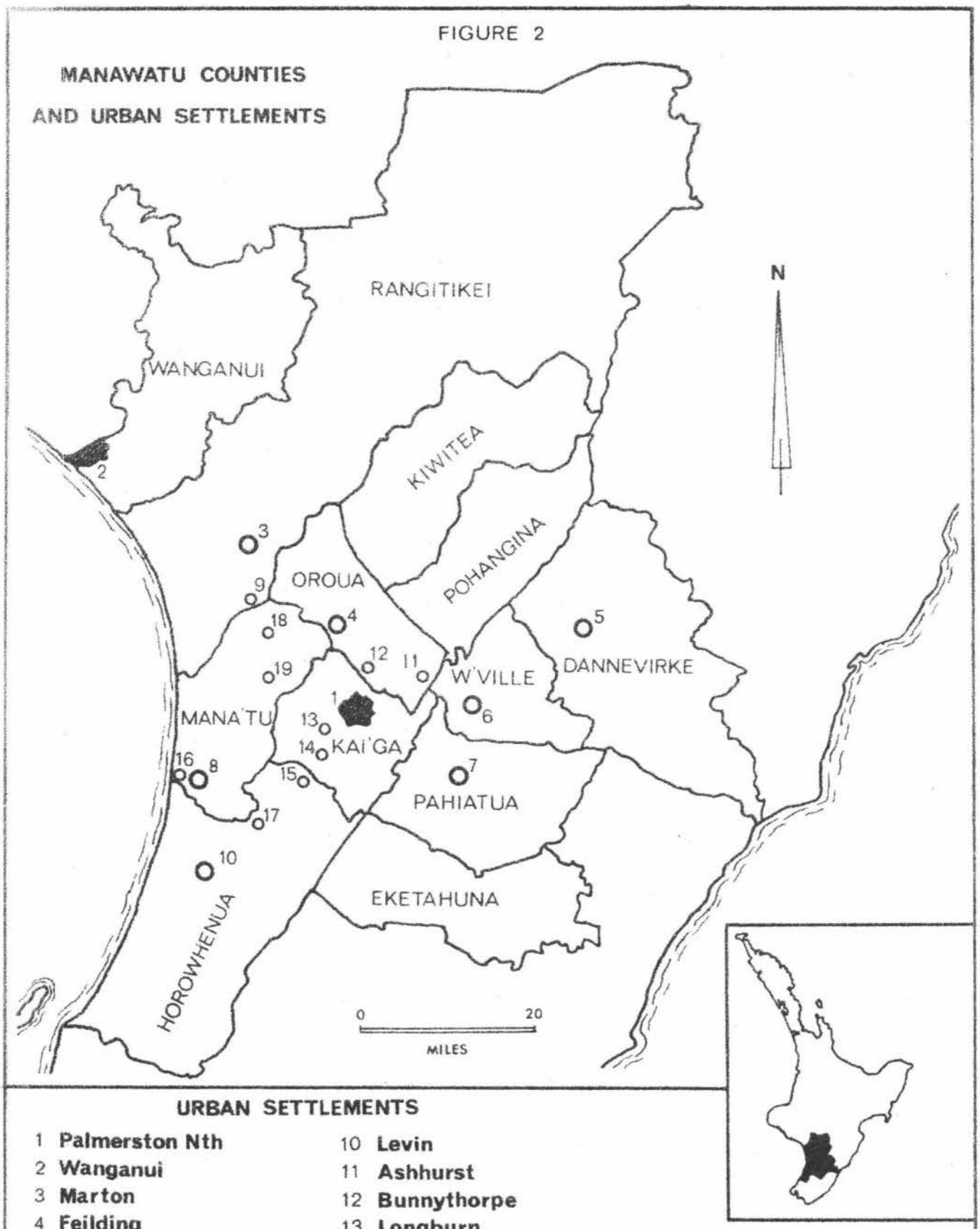
opportunities is by travelling to a larger centre to find work while continuing to live at some distance from the work site. In this manner some of the costs of migrating are avoided but other costs become apparent. Actual money costs are incurred in travel by workers, but on the other hand there may be psychological costs as well. These may be summarised as the costs involved in strain, both physical and mental which may be the result of time spent in travel, and the amount of leisure time lost through travelling to work. Commuting, however, gives the worker a wider choice of employment and makes a wider labour market available to the employer from which to choose his staff.

## THE STUDY AREA

The Manawatu commuting region comprises the counties of Kiwitea, Pohangina, Oroua, Manawatu, Kairanga, Horowhenua and Woodville, the lower part of the Rangitikei County from Marton south and the portions of the Pahiatua and Dannevirke Counties lying adjacent to the Manawatu River Gorge. (See Fig. 2). While commuters travel from Wanganui city, its exclusion from this list may be justified by the circumstances in which these persons travel. This is discussed in Chapter 2.

The central core of the Manawatu consists of the six counties of Kiwitea, Pohangina, Oroua, Kairanga, Manawatu and Horowhenua. Within the six counties urban settlement varies in function and in size of population and consists of the city of

FIGURE 2




**URBAN SETTLEMENTS**

1 **Palmerston Nth**
2 **Wanganui**
3 **Marton**
4 **Feilding**
5 **Dannevirke**
6 **Woodville**
7 **Pahiatua**
8 **Foxton**
9 **Bulls**
10 **Levin**
11 **Ashhurst**
12 **Bunnythorpe**
13 **Longburn**
14 **Linton**
15 **Tokomaru**
16 **Foxton Beach**
17 **Shannon**
18 **Sanson**
19 **Rongotea**

SOURCE: N.Z.M.S. 138 A

B.D.B.

Palmerston North, the boroughs of Levin, Feilding and Foxton and a series of County Towns and townships the population of which varies from almost 2,000 to 92. (See Table II, Appendix D).

In function as in population Palmerston North is the most important settlement in the urban hierarchy for it is to Palmerston North that the Manawatu looks for those goods and services which are provided in a regional capital. Wellington is of greater importance, and for some services the area looks to the national capital, but since that city is beyond the scope of this study a discussion of its place in the Manawatu hierarchy is not warranted.

Carr (1966) has shown Levin to be in a transitional stage between its former function as a market town and its potential role as a relatively important industrial centre. Feilding, examined in detail by Pownall (1946), (1947), and (1955), is of importance as a market town not only locally but to a much larger area for its stock sales attract buyers from as far afield as Hawkes Bay, Taranaki and Waikato. [2] Shannon and Foxton, studied respectively by Tannock (1968), and Hunt (1968), provide a range of retail and commercial activities for the population of their hinterlands. Industry, too, plays some part in the vitality of these two settlements.

The smaller settlements in the Manawatu have been described in three papers by Franklin, (1960), and (1961), and by Anderson

and Franklin (1955). Generally these settlements are rural in atmosphere, small in population and have been subjected to fluctuations in population since the end of World War II. (Tables III and IV, Appendix D). Evidence is on hand to show that there has been a decline in commercial activity in these centres. [3]

## HISTORICAL SETTLEMENT

Settlement in the Manawatu was originally concentrated along the coastal margins. Gold the basis of rapid population expansion in other areas of New Zealand was not found in the Manawatu, but, on the other hand, there was no threat of war with the Maori which settlers in Northland, the Waikato and Taranaki had experienced. The tardy beginnings of settlement in the Manawatu can be attributed, in part, to the dense nature of the original forest cover, confusion over the ownership of the land, and the reluctance of some Maori owners to sell. [4]

The initial period of settlement was characterised by a pioneering economy. Agricultural production in this early period when the bush was being cleared and when farms were being established was largely given over to supplying the settler's immediate requirements. Any surplus was traded, either for cash or for barter, in the settlements which arose in the wake of bush burning. Timber and flax provided the settler with cash to purchase seed, and this income was supplemented by wages

which could be earned by working on neighbouring farms. Seed was scattered on the ash left by the burnt bush and scrub, and since the ash provided a good seed bed, rough pastures were soon established and grazing animals introduced.

The turn of the century saw the Manawatu largely cleared of its forest cover and converted into farmland. Farming up to this point was, generally speaking, a labour intensive form of economic activity but in the twentieth century a change to a capital intensive type has taken place, the application of mechanised devices having transformed the pastoral industries.

TECHNOLOGICAL INNOVATION

Since 1920 the pastoral industries of the Manawatu, as of New Zealand generally, have been characterised by a marked increase in the amount of production per man. This increase has been due to improvements in technique as well as the introduction of technologies on the farms. Artificial fertilisers and the seed certification system, introduced in the 1920's have improved the quality of pastures and ultimately the quantity of agricultural production. The electrification of the milking shed and shearing plant both increased production and reduced the labour requirement in agricultural industry by making both milking and shearing less arduous and less time consuming.

One of the more far reaching introductions in the transformation of the pastoral industries was the replacement of the

draught horse by the wheeled tractor. The tractor's efficiency compared with the horse and its greater potential for work has done much to reduce manpower needs. The great increase in tractor numbers is shown in Table I.

TABLE I.

TRACTORS IN NEW ZEALAND

| 1919 | 1929 | 1939 | 1949 | 1959 | 1963-64 | 1967 |
|---|---|---|---|---|---|---|
| 136 | 3,377 | 9,639 | 27,447 | 75,291 | 86,427 | 91,669 |

Sources: Official New Zealand Yearbook 1968, 413
McLintock, (ed), 1966, 629.

Together with the tractor, mechanical implements have revolutionised lowland farming techniques. Harvesting and tilling equipment have changed the preparation of seed beds and the harvesting of crops. The introduction of the power-take-off in 1925 made possible a greater range of equipment, and the advent of the rubber tyred tractor in 1935 made the machine more versatile and more mobile. One of the most important improvements in tractor technology was the introduction of the hydraulic three point linkage system which made possible a range of specialised implements the efficiency of which was a vast improvement over older types which were now outdated. This system was introduced before 1939, but its availability was delayed by the

second World War, and it was not until 1947 that the system became widely used.

Since initial settlement took place, progress in the rural areas of the Manawatu has been widespread. Farm economies have moved from labour intensive to capital intensive due to the replacement of agricultural labour with mechanical equipment and the agricultural industries themselves have changed from extensive to more intensive forms. In the 1920's, due to the introduction of various techniques, farming practices have tended towards the accomplishment of making maximum use of rapid and prolonged pasture growth. Since this time there has been a marked increase in production despite the reduced numbers employed in agriculture. Today, as Flux has indicated, the amount of labour used on New Zealand farms is low compared with other countries. [5] The labour force is presently much less than in the 1920's while production has increased by some 100 per cent.

URBAN SETTLEMENT

The villages of the Manawatu were initially established to cater for the requirements of settlers clearing the land, timber millers, flax workers and public works employees. [6] They were social and economic centres for their hinterlands in a period when communications were difficult. Industry revolved around timber and flax milling, and groups of itinerant workers in flax and timber were often a considerable element in village

populations. From pioneer settlements the villages became collecting and distributing centres for their farming hinterlands and service centres for the rural population. An indication of the change which has taken place is the presence of abandoned or converted boarding houses originally established to cater to itinerant workers whose means of communication with the rest of the district was by railway or by horse. [7]

Franklin has documented the opening and closing of Post Offices in the Manawatu. [8] The Post Office, often in the early period run in conjunction with the general store, and later housed in a separate building constructed for the purpose, was the chief means of communication with the outside world from the village isolated by bad, or sometimes non-existent roads. Franklin has suggested that these closings reflect both the improvement in communications and the influence of economic change since the affluence which allowed the purchase of motor vehicles came in a period when communications were improving. The motor vehicle, indeed, occasioned the necessity for better roads. The need for Post and Telegraph Offices at close proximity to pockets of population was thus removed.

While one of the earliest forms of commercial activity, the general store, is still to be found in most villages the range of goods carried has been changed and curtailed. The increasing use of the motor car has meant that shops in the village tend to

stock only the day to day requirements of their customers, who prefer to shop in the city or the larger centres for fashion goods and luxuries and sophisticated farm and household machinery. Professional services and banking are carried out in the larger towns and the city except for bank agencies which operate for limited periods in some small centres. The butcher and baker who once provided a localised service have generally now been replaced by larger concerns of city origin. Transport is such that meat and bread can be delivered fresh from a centralised depot with little difficulty and at a negligible cost.

The acceptance and application of technological improvements on the farms inevitably produced changes in the villages. When the horse was replaced by the tractor those firms which were connected with work horses, the feed merchant and saddler, farrier and blacksmith, were replaced by motor garages and service stations supplying fuel and oil. While farm machinery requires mechanical maintenance and fuel, many modern farmers seek service from the city, either by taking the machine to the city where specialist mechanics are available, or by calling for service from the firm whose travelling workshop is available to carry out servicing on the farm. Oil companies now provide a farm service and fuel is supplied directly to the farmer. More and more the village garage and service station must rely upon the trade of the passing motorist.

The implementation of the hydraulic three point linkage

system gave rise to a range of specialised tractor implements. These implements reduced the labour requirement in certain farm tasks and occasioned the rise of specialised industries, or the extension of existing ones to service them. Thus the village blacksmith, whose expertise with the older types of farm equipment had kept him in business, now found that repairs and service work were being taken to the city.

The dairy factory, often the only secondary industry in the village, has suffered from the introduction of new methods and the fluctuations of overseas demands. Butter and cheese have declined in importance as export commodities and casein and milk powder are being produced to cater to the requirements of overseas buyers. Tanker collection of milk and the introduction of the herring bone milking shed have revolutionised dairy farm practices and the production of whole milk has been increased while the labour requirement has fallen. Milk tankers make it possible to move vast quantities of whole milk over long distances without deterioration. This has resulted in the closing of some dairy factories, a serious loss of industry to the urban centres where this has occurred, and a decline in work opportunities in those centres.

Although in many cases the cartage contractor's yard is still to be found in the village, it is often now the depot of a centralised company rather than the head office of a local concern. Saleyards, once the focus of much of the economic

activity of the rural population, and a venue where farmers met to discuss mutual and peculiar problems, have disappeared from some villages. In others, where saleyards remain, their use is severely limited as stock sales usually take place in the larger centres. [9] As the village has been reduced in function and importance there has been a reduction in occupational opportunities near to the village dweller's home. Where this has occurred, the village resident has had to seek work elsewhere. Many faced with this situation have migrated away from the village thus accounting, in part, for the decline of village populations. Others, however, have sought work in the city, being content to travel daily rather than move residence.

## THE IMPACT OF THE MOTOR VEHICLE

Hinman (1966) has pointed out that the decade 1900-10 saw the appearance of firms catering specifically for the motor vehicle trade, but it was not until the period 1910-21 that the beginnings of trends involving the motor vehicle became apparent. [10] It was in the next decade, 1921-30, however, that the full impact of the motor vehicle was felt in the rural areas.

Before the motor car and truck became any more than the possession of the wealthy, the villages of the Manawatu were, as elsewhere in New Zealand, the sites of the shops which supplied the needs and fulfilled the services of the farmers of the district. Much of what was required in the day to day

life of the farmer and his family was supplied by the village, and it was only for those items which required the investment of larger sums of money, or whose sophistication was beyond the means of the village merchant, that the farmer paid a visit to the city. Industry in the village and small town tended to be of a service type, catering directly to the farmer's requirements in operating his farm, or for the collection and processing of his agricultural produce.

The increase in motor transport had a profound effect upon the rural areas, the smaller towns and the city. (Table V, Appendix D). The rural dweller who now possessed a quick and efficient means of transport, bypassed the smaller centres and sought goods and services in the city to a much greater extent than hitherto. The motor car had virtually brought the city within easy reach of the farmer and the wider range and the variety of goods available in the city drew his custom. The smaller urban settlements, now bypassed in favour of the city, declined as centres for the purchase of goods and services, and as work places, and the city grew with the influx of capital and the demand for goods and services which came with the new customers.

## THE GROWTH OF THE CITY

The growth which Palmerston North experienced in the early period of its history was consequent upon the development of

permanent means of communication, and since 1900, when the Square was almost completely surrounded by business premises, the city has continued to outstrip the Manawatu's other urban settlements in its growth. Among the complex of factors which have given rise to this growth Anderson distinguishes five major reasons.[1] These reasons are, the continued growth and intensification of farming in the city's hinterland, the continued improvement in real living standards experienced by both urban and rural populations and the improvement and extension in the quality and range of goods available in the centre, the increase in motor transport and its influence on the economic and social life of the city and its tributary region, the growth in the tertiary sector of the city's economy, and finally, the expansion and diversification of the city's manufacturing industries.

The growth of the population of Palmerston North and the extension and change in its function which has taken place over the years is a reflection of the prosperity of the city's hinterland. This prosperity has arisen as a result of those factors which have combined to make farming in the region more efficient and more profitable. Not only has the city benefitted from this prosperity, but to some extent it has been shared by the larger towns, notably Feilding and Levin whose populations have risen at a remarkable rate. In the boroughs some growth has been recorded but in the villages any increase, except for some isolated instances, has been minimal, and all too often there has

been a decline in population and in function. (See Tables III and IV, Appendix D).

Palmerston North is today the regional centre for the Manawatu, dominating the area in population as well as in function, for it is in Palmerston North that those enterprises are located which serve the Manawatu generally and which are not found elsewhere within the region. [11] Specialist expertise in medicine, institutions of research and tertiary education are located within the Palmerston North Urban Area, and in the city are to be found the area's government offices, the branch offices of several national firms and the head offices of not a few locally owned and operated companies which cater for a national, and in some cases an international, market. [12]

## OCCUPATIONAL OPPORTUNITY IN PALMERSTON NORTH

From its earliest days Palmerston North has been an industrial centre. [13] Industry was established at the outset of settlement largely to provide for the requirements of the local population. Sawmilling and Blacksmithing were among the earliest types of industrial concern to set up in Palmerston North and while some of the industries associated with pioneering have disappeared many of the smaller early firms have remained although changes have been made in the type of goods manufactured. Changes have been made according to the dictates of technology and the demands of consumers and new firms have established in

the city. Presently a wide range of manufactured goods including such diverse products as nails, electrical appliances, furniture, textiles and sports goods is produced by Palmerston North industries. Generally, city industry has adapted to changes in demand and the increase in specialisation in industrial tasks has had the effect of attracting labour to the city. The increase of 26 per cent in apprenticeships held in Palmerston North in the period 1959-69 is an indication of the attraction of the city as a venue for the acquisition of industrial skills.

Warren (1969) has reviewed the present industrial structure in Palmerston North City, and the changes in industrial location which were occasioned by the relocation of the railway towards the west of the city. In terms of numbers employed in manufacturing industry, units vary in size from single-man enterprises to factories employing over 150 persons. Today some 39 per cent of the Palmerston North Urban Area's workforce is engaged in manufacturing and service industry.

## TERTIARY OCCUPATIONS

The percentage of the workforce engaged in tertiary occupations is an index of development and prosperity. Over the years Palmerston North has attracted a considerable number of professional workers in such fields as medicine, education and accountancy. The city's base hospital has some forty consultants whose reputation extends beyond the Hospital Board's district. In

education services there are twenty-three primary schools and six post-primary schools, a Teachers' College and University the total staff of which institutions exceeds 1,000. Research institutions account for a further 300 workers and the city has in excess of seventy professional accountants.

Tertiary workers in the professional fields provide services to the community at large and are not necessarily associated either closely or exclusively with agriculture or manufacturing industry. A further group of tertiary workers, however, is found in clerical occupations closely associated with manufacturing industry, dealing with the domestic affairs of the businesses concerned. A large group is employed in finance, insurance and distribution providing a service to the general public rather than any one particular group, as does that group of tertiary workers in transport and communications, local body administration and government offices. Warehouse employees and retail sales workers complete the range of main tertiary occupations in Palmerston North. The growth of the tertiary industries, particularly the clerical occupations has been a potent force in attracting commuting labour and these occupations account for the occupational preferences of a large group of commuters.

## THE FORCES LEADING TO COMMUTING.

The changes which have taken place in the Manawatu since initial settlement have been reflected in the growth of the city

and the larger centres, in rural depopulation and the decline of the villages. The increasing sophistication of equipment and its greater efficiency, the refinement of technique, and the greater application of labour-saving devices in agriculture have reduced the manpower required for the operation of farming enterprises at a reasonable economic level, and has been an important factor in the rise in quantity and quality of agricultural production and has forced redundant labour to seek occupations in other locations. The increase in purchasing power and the increased standard of living enjoyed by the farming community has been reflected in the decline in village business and industry and, as a consequence, there has been a decline in work opportunities in village enterprises. The rising standard of living has been extended to all sections of the community and there has been, as a result, a rising demand for luxury and fashion goods which are available in the larger centres.

The increase in specialisation and the centralisation of services in the city over the last forty years has resulted in an increase in work opportunities in the city. While opportunities in the villages have declined, the tendency towards centralisation has meant a concentration of work in the city. In this way the city has attracted labour while the village and farm have tended to dispense with an repel workers since there are reduced opportunities in village and agricultural occupations. This change in the location of work has imposed a necessity for mobility on

village and rural residents, a mobility which was expressed initially by migration but which led more latterly to the emergence of commuting.

COMMUTING TODAY.

A survey of the Palmerston North Urban Area conducted in 1968-69 involving 1,742 employers in whose enterprises 20,902 persons were employed, revealed that 1,194 or 5.7 per cent of the workforce of the Palmerston North Urban Area were commuters. Of these, 357 were rural dwellers and 837 travelled from the urban settlements of the Manawatu commuting region. These workers have responded to the lack of occupational opportunity in their residential areas of commuting daily to the Palmerston North Urban Area as an alternative to migration.

FOOTNOTES

1. Anderson, 1961, 116-117.
2. The late E.R. Ewart, former manager, Murray Roberts & Co., Feilding, Pers Comm.
3. Franklin, 1961, 82., and Anderson & Franklin, 1955, 70.
4. Buick (1903) gives a detailed account of the period of initial settlement in the Manawatu.
5. Flux, 1966, 434.
6. The term "Village" while capable of various definitions, is used here in the sense defined by Franklin, 1960, 145.
7. In its heyday Tokomaru, for example, had two such establishments. These are now defunct, see Anderson & Franklin, 1955, 67.
8. Franklin, 1960, 158.
9. Palmerston North's saleyards have been closed for many years and in the Manawatu the principal stock sales are held at Feilding, Levin and Dannevirke.
10. Hinman's thesis deals specifically with the west coast of the South Island, but the general conclusions, in the absence of local evidence are assumed to be valid for the Manawatu.
11. Anderson, 1961, 114.
12. While the Teachers' College is located in the city, the Research Institutions, the Department of Scientific and Industrial Research, (D.S.I.R.), and the Dairy Research

Institute, (D.R.I.), and Massey University are located in the Palmerston North Urban Area immediately adjacent to the city boundary.

13. Anderson, 1961, 121.

# CHAPTER 2.

## ORIGINS OF COMMUTERS

Historically, the separation of home and workplace is of recent origin, closely connected with the rise of industrialisation, itself the basis of rapid urban expansion, and even more recently with the upward trend in motor vehicle ownership. [1] Before the advent of mass transportation facilities and the private motor car in more recent times, European and North American workers were obliged to live in close proximity to their workplace, but the implementation of transportation systems allowed inhabitants of cities to disperse towards peripheral areas. The residential suburbs thus created were separated from central commercial or industrial sites and a necessity for work trips of varying length was imposed upon suburban residents.

In New Zealand it would be reasonable to assume that attitudes to work/residence separation have been inherited from overseas, and although the conditions which have been experienced overseas in overcrowded cities and blighted central areas have seldom been encountered in this country, the basic attitude to work/residence separation has been assimilated by New Zealand workers. The historically compact city has not, in the main, been established in this country where, almost from the beginnings of settlement, urban transport facilities and the availability of land for urban housing were such that compact settlements were

not generally necessary.

It would seem that commuting in New Zealand is largely the result of the worker's preference for his own traditional "quarter acre" residential section, the extended nature of the country's settlements and the lack of employment opportunities close to the residential locations of urban workers.

Of the 1,194 workers who were classified as commuters for the purpose of this study, 837 or 70.1 per cent had residences in urban settlements while a further 357 or 29.9 per cent were rural dwellers. Of the 837, more than one half (62.7 per cent) lived within a radius of ten miles from the city centre, and within this ten mile radius is the Borough of Feilding, Ashhurst County Town and the townships of Longburn (which is within the Urban Area), Bunnythorpe and Linton. Of the 357 rural dwellers the largest proportion (56.5 per cent) were resident in the Kairanga County while a further 27.1 per cent travelled daily from the Manawatu County. (See Table II).

Distance seems to be a potent factor in limiting the numbers of commuters to Palmerston North. While the greatest majority of commuters live in locations adjacent to the Urban Area the number falls with increasing distance from the city. It is assumed here that while the city attracts workers from further afield than those areas immediately adjacent to the Urban Area, many workers prefer in this case, especially among the single, to live within

the city during the week, returning to their homes at the weekend. These people become, in effect, weekend commuters and although many employers mentioned such a phenomenon existing with respect to their own workers, no figures were taken of the numbers involved. [2]

TABLE II

ORIGIN OF COMMUTERS BY COUNTY OF RESIDENCE

| | Rural | | Urban | | Total | |
|---|---|---|---|---|---|---|
| | Number | Per Cent | Number | Per Cent | Number | Per Cent |
| Kairanga | 202 | 56.58 | 43 | 5.14 | 245 | 20.52 |
| Manawatu | 97 | 27.17 | 157 | 18.76 | 254 | 21.27 |
| Oroua | 28 | 7.84 | 482 | 57.59 | 510 | 42.71 |
| Horowhenua | 21 | 5.88 | 61 | 7.29 | 82 | 6.87 |
| Woodville | 1 | .28 | 42 | 5.02 | 43 | 3.60 |
| Pahiatua | 1 | .28 | 12 | 1.43 | 13 | 1.09 |
| Pohangina | 3 | .84 | - | - | 3 | .25 |
| Kiwitea | 4 | 1.12 | - | - | 4 | .33 |
| Rangitikei | - | - | 24 | 2.87 | 24 | 2.01 |
| Dannevirke | - | - | 7 | .84 | 7 | .59 |
| Wanganui | - | - | 9 | 1.07 | 9 | .75 |
| | 357 | 99.99 | 837 | 100.01 | 1194 | 99.99 |

Source for this and subsequent Tables, unless otherwise stated, is data from the survey.

## REASONS FOR TRAVEL

### Availability of Employment.

Of the 445 commuters interviewed some 294 or 66 per cent gave "availability" as the reason for taking the employment in Palmerston North which occasioned their being classed as commuters. This underscores the proposition assumed earlier, (Chapter 1), that one of the primary factors inducing commuting is a lack of employment opportunity near the commuter's home. Further weight is given to the point by the fact that some 421 commuters, when asked whether the same opportunity existed near their home answered "No". Here, the negative answer included occupations not existing in the settlement of residence and those already filled and not therefore available to the person interviewed.

Some of those interviewed intimated that although a particular occupation was sought by the commuter, no vacancy could be found either near home or in the city in which case the commuter then chose the next nearest occupation which was available, and this was often located in the city rather than near home.

Availability of suitable employment thus appears to be the most important single factor promoting commuting to the Palmerston North Urban Area.

### Education

The next largest group was that which recorded "Education of

self" as the reason for their daily travel. In this group were 37 apprentices and 33 Teachers' College students.[3] In the latter case, those people wishing to engage in the primary service of the teaching profession are obliged to complete a course at a Teachers' College prior to certification, and in the Manawatu the only such College is that at Palmerston North. Those wishing to attend must either seek accommodation in the city or travel daily. Where a student decides on the latter course the attraction of board at home at a reasonably low rate, and the added inducement of a travel allowance operate strongly to keep the student resident at home providing that travel facilities are such that easy access to the city at appropriate hours, and within a reasonable time is assured. Those apprentices who were numbered among the commuters fell into two main categories, those who, wishing to follow a particular trade, found no opportunities near their place of residence, and others who, seeking apprenticeships for particular occupations, found that opportunities near home were either limited or already taken.

In some trades such as aircraft engineering, jewellery manufacture and yacht and boat building apprenticeships are offered nowhere in the Manawatu except in Palmerston North. Other trades which may be represented elsewhere are limited in number and in the size of operation so that only a few apprentices may be taken on at any one time. Should such positions be filled, the intending apprentice is obliged to consider Palmerston North

as the centre where the opportunity to learn the trade of his choice may be found.

Skills

Some 35 commuters, or 7.8 per cent of those interviewed had sought work in Palmerston North because they were skilled workers in various trades and professions which could not be exercised near their places of residence. In this group were several workers, who, having learned trades near home, were obliged to travel daily when their former workplaces near home closed down. A further group had chosen, for one reason or another, to live at their present site and to travel daily to Palmerston North while there were others who had found it desirable in the past to take up apprenticeships and had continued to travel after becoming skilled rather than change residence or workplace.

Money

Of those interviewed, 11 (2.4 per cent) gave "Money" as the reason for taking employment in the Palmerston North Urban Area. Of these the majority were wage earners who sought occupations which paid more than could be earned in occupations nearer residential areas. Others sought higher wages in order to save towards another occupation objective, for example, the Church's ministry, or intending students who could not otherwise have afforded to undertake their proposed courses. A few, however, were married woman who were supplementing the family income with

part-time jobs or suitable other light work.

Other

Among the 35 remaining (7.8 per cent) a variety of reasons were recorded. Travel to work in the worker's own, or the family's business accounted for 14 commuters (3.1 per cent). A further 6, (1.3 per cent) were engaged in occupations for interest only rather than for monetary gain, although wages were received. These were mainly retired people who sough light occupations to "fill in time". Transfers within the same firm accounted for the reasons of 4 (0.8 per cent) daily travellers while another 4 had chosen specific light occupations in Palmerston North because of indifferent health. The remaining 7 persons (1.5 per cent) recorded a variety of personal reasons ranging from "security of employment" to "personal interest in this type of occupation", and, "to oblige a friend".

REASONS FOR RESIDENCE

An analysis of the marital status of the 445 commuters interviewed reveals that 161 (36.2 per cent) were married, 275 (61.8 per cent) were single, 3 (0.7 per cent) were separated from a spouse still living and 6 (1.3 per cent) were widowed. Of the 275 single persons, 264 were living at home with parents, 7 were boarders living with non-relatives, 2 were boarders in the houses of relatives other than parents and the remaining 2 were single persons who were living as heads of house after the deaths of their parents.

Parents' Home

Of the 445 commuters interviewed 264 recorded "Parents' home" as the reason for their choice of residence. Of these 264 in excess of 140 were persons younger than 19 years of age. Many of these commuters were under parental restraint with regard to choice of residence. Where parents considered the worker "too young" to leave home and live in the city the person had little option but to comply with parental pressure. Added inducement was also often given by way of either free board or board at such a cheap rate that moving to the city became undesirable.

In some cases, however, it appears that commuters did not appreciate that the costs of board and travel were part of the same fixed costs of living. The study did reveal that some commuters were paying in excess of the price of board in the city for the combined total of board at home and the costs of travel. No value, in terms of money, however, can be placed upon the convenience and pleasure which accrues from living with one's own family, and for this reason some single commuters are content to pay extra for this rather than move into the city and into an unfamiliar environment.

Housing

A further 15 per cent (71) of the commuters gave "Housing availability and/or costs" as the reason for their choice of residential area. Where the availability of money for housing is restricted some of these 71 commuters had been obliged to seek

housing at costs lower than those operating in Palmerston North. Others had established homes while in occupations near the residence and for one reason or another had begun to commute to the Palmerston North Urban Area. Where this was the case there appeared to be little incentive for moving to the city when the costs of moving might operate against this.

It would appear that where mortgage repayments are being made on a residence there seems to be little incentive to move, and after the final payment is made, even less. A home which has been planned by its owner, its gardens and paths set out according to the taste of the householder appears to be a strong inducement to remain a resident of the present area, even when the worker is obliged to commute in order to find work. To move, would not, in many cases, be advantageous economically and the purchase price of a home comparable to that which is at present enjoyed could well be beyond the financial resources of the commuter for city prices are normally in excess of those in the villages and rural areas.

Where commuters were renting homes the amounts paid for rent were often at such a rate that the combined costs of rent and travel were either equal to, or lower than the costs of renting a similar dwelling in the city. Where this was the case there appeared to be little inducement from the convenience point of view for the commuter to give up what is known and enjoyed in one environment for what, in large measure, is unknown

and where the same social intercourse may not be offering in another environment.

Atmosphere

The "Atmosphere" of the countryside or the small village was recorded in 27 of the cases (6.0 per cent) as the reason for the commuter's choice of residence. In these cases workers prefer to travel to work, often over quite long distances, in order to be able to retire each evening to the tranquility of the home environment. While some of those interviewed returned double answers in that they gave as first choice "Housing costs" and second, "Atmosphere", others were quite adamant that their chief reason was "Atmosphere" and that any other reason was incidental to that. [4] Those commuters recording "Atmosphere" as the main reason gave it as their opinion that this would be lost if a move to the city were contemplated.

Other

Of the 83 remaining (18.6 per cent), 45 were women who recorded "Accompanied husband" under this heading. Among these, however, were some widows who had become head of the household after the death of their husbands.

Twenty one others could give no reason other than, "This is my home town". This fact seemed to outweigh other considerations such as time spent in travel, increased costs, and inconvenience. "Former occupations" accounted for the reasons of another 12, while the considerations of indifferent health had induced 3

others to take up or maintain residences away from the Urban Area. In one case the education of the commuter's children was given as the reason for residence, and in another, the availability of suitable housing.

RESIDENTIAL INERTIA

As with migration over greater distances, there appears to be with those who commute daily to work a psychological factor against actually moving residence to the area of their daily destination. While there may be actual economic reasons which operate against moving, or other reasons, such as indifferent health, or family pressure on the young, there are those who remain with no apparent tangible reason to do so. Among other writers Hunter and Reid have shown that a psychological "set" is needed before actual migration takes place. Although circumstances may make migration advantageous, the achievement of a psychological "set" is a necessary prelude to a conscious decision to migrate.

Some 21 commuters, as noted above, could give no other reason for their choice of residence than "This is my home town". In these cases commuters had not "Made up their minds" having not achieved the psychological "set" necessary before migration could take place. The answer to the question, "Why do you choose to live here", elicited answers such as, "I've never given it much thought", "My family live here, all my friends are here, it is where I was born and Mum and Dad are still here", "No I don't

think I'd like to live anywhere else".

In these cases the possible economic advantage of moving into the city was clearly not outweighed in the minds of the commuters by the social advantage of living in an environment made familiar through long association. This appeared to be the case, even more especially, where the worker was dwelling in a town in which his family had lived for several generations and in which he felt part of the community. "Community spirit" here seems to play a part in what might be called "residential inertia" and although such feeling may not affect all sections of the community, where a commuter felt part of a group, albeit a family group, he seemed loath to give up his position and begin afresh in unfamiliar surroundings and in a new and unknown group.

## COMMUTING AND MIGRATION

It has been pointed out that commuting may be a prelude to migration.[6] While workers are young the inducements to live at home are strong. Parents offer cheaper board to their children to induce children to remain resident within the family group until it is felt that they can cope with living away from home as responsible adults. Unless pressures and inducements are maintained by parents, it is possible that children move away from homes in outlying areas into flats within the city. Although no actual figures are available there is at least some evidence that increasing numbers are doing this.[7] Hunter and Reid have pointed out that mobility is greatest in the young person

attracted to his first occupation.[8] This appears to be borne out here by virtue of the fact that of the 445 commuters interviewed, 245 (55.0 per cent) had been at school previous to taking up this as their first occupation; (Table III).

TABLE III

LOCATION OF LAST EMPLOYMENT

| | Number | Per Cent |
|---|---|---|
| Own Location | 64 | 14.38 |
| Palmerston North City | 70 | 15.73 |
| Palmerston North Urban Area | 5 | 1.12 |
| Manawatu | 12 | 2.70 |
| Wellington Land District | 23 | 5.17 |
| Auckland Land District | 14 | 3.15 |
| South Island | 3 | .67 |
| Overseas | 9 | 2.02 |
| School | 245 | 55.06 |
| | 445 | 100.00 |

It would appear that younger commuters starting in their first occupations will remain living at home for the first one to three years unless alternative arrangements can be made for board with relatives, friends or an approved landlord, in which case boarding may be permitted.

Older teenagers, however, tend to seek accommodation in the city where flatting allows more time to enjoy social-recreational activities which appear to the commuter to be offered in greater range than in the smaller home environment. In this way the

commuter may increase the amount of time to be spent in leisure time activities, time which would be eroded by that spent in travelling to work.

COMMUTING AND MARRIAGE

There would appear to be no appreciable difference made to commuting by the marriage of the commuter except that, as may be expected, women tend to finish work at marriage and therefore cease to be commuters. (See Table IV). An analysis of the figures relating to commuting and Marital Status reveals that marriage makes little or no difference to male commuters. They appear to continue as commuters after marriage. Some indeed, become commuters after marriage since housing costs may be lower in the smaller towns and these become attractive residential sites to those whose finances for building or buying a home are limited.

Both separated and widowed females outnumber males in the same categories by virtue of the fact that the necessity of an income has obliged them to work, and the availability of suitable employment in the Palmerston North Urban Area appears to be greater than near home, and the economics of selling the present residence and buying in Palmerston North outweighs the convenience of living near work. Males in the same categories probably continue in the employment they had prior to the demise of their spouse or separation whether this employment involved commuting or not.

TABLE IV

SEX AND MARITAL STATUS OF COMMUTERS

| | Married | | Single | | Separated | | Widowed | | |
|---|---|---|---|---|---|---|---|---|---|
| | M | F | M | F | M | F | M | F | Total |
| Number | 123 | 38 | 119 | 156 | 1 | 2 | 1 | 5 | 445 |
| Per Cent | 27.64 | 8.54 | 26.74 | 35.06 | 0.22 | 0.45 | 0.22 | 1.12 | 99.99 |

COMMUTING AND AGE

Among the variables which operate against commuting is age. While young, as has already been noted, the worker enjoys the maximum mobility, but this mobility decreases with increasing age. Reference to the following table shows that 271 or 60.89 per cent of the persons interviewed were under 25 years of age.

TABLE V

AGE OF 445 COMMUTERS

| Age | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 | 55-59 | 60+ |
|---|---|---|---|---|---|---|---|---|---|---|
| Number | 141 | 130 | 45 | 26 | 19 | 26 | 15 | 20 | 13 | 10 |
| Per Cent | 31.68 | 29.21 | 10.11 | 5.84 | 4.27 | 5.84 | 3.37 | 4.49 | 2.92 | 2.23 |
| Cumulative Per Cent | 31.68 | 60.89 | 71.00 | 76.84 | 81.11 | 86.95 | 90.32 | 94.81 | 97.73 | 99.98 |

After age 25 the numbers of commuters falls off steeply towards retiring age. It may be assumed that with increasing age the commuter either takes employment nearer his home or moves residence to Palmerston North. Reference to Table III reveals

that only 75 of those interviewed (16.8 per cent) were in their second occupation within the Palmerston North Urban Area, only 12 (2.6 per cent) had formerly been commuters to other centres and 64 (14.0 per cent) had worked last near their residences. It may be concluded that with increasing age the stress of travelling is exchanged for a home within the city, for by now the worker has amassed sufficient capital to establish a home there.

RETENTION OF OCCUPATION

While the majority of commuters are aged under 24 years, and single women tend to stop working after marriage there is some basis in the assumption that commuters tend to remain in occupations in the Urban Area although they may change the area of their residence. An examination of the following table reveals that the majority of commuters had been in the occupation for which they were interviewed, between one and four years.

TABLE VI

LENGTH OF EMPLOYMENT

| Time | Under 6 mo | 6 mo to 1 year | 1-4 yrs. | 5-9 yrs. | 10-14 yrs. | 15 years & over | All life | Totals |
|---|---|---|---|---|---|---|---|---|
| Number | 31 | 58 | 259 | 61 | 24 | 10 | 2 | 445 |
| Per Cent | 6.97 | 13.03 | 58.20 | 13.71 | 5.39 | 2.25 | 0.45 | 99.99 |

Some 377 or 84.7 per cent indicated that they were content to work in the city rather than nearer home, but 68 (15.3 per cent) indicated that they would prefer to live nearer their city workplace. It may be assumed, then, that the reduction in numbers

of commuters after age 24 and after four years of service has been given is as much due to migration to the Urban Area as to the marriage of single female commuters and their consequent withdrawal from the number of daily travellers.

The desire to move to Palmerston North expressed by 68 commuters appears to be due more to age than to the distance travelled. Younger commuters appear to entertain a greater desire to migrate than do older persons. Reference to Table VII demonstrates the relationships between the desire to migrate, age and the distance.

DORMITORY FUNCTIONS OF VILLAGES

Conacher, in his work on North Shore, Auckland, has indicated two methods of delimiting a dormitory suburb. [9] The first method is by selecting an arbitrary proportion of the labour force of a place and calculating the proportion above that selected which works in another centre. If the proportion working elsewhere exceeds the arbitrarily selected amount then that place has achieved dormitory status.

An examination of the employment statistics for the Manawatu reveals that some 66.6 per cent of the labour force is engaged in tertiary occupations, the remaining 33.3 per cent in primary and secondary pursuits. Thirty-three per cent may then be selected as an acceptable, but arbitrary figure to delineate a dormitory settlement since the primary and secondary occupations support the

TABLE VII

COMMUTERS INDICATING A DESIRE TO LIVE NEARER WORK.

AGE AND RESIDENTIAL LOCATION

| Place of Residence | Age in Years | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 | 55-59 | Total |
| Kairanga County | 6 | 3 | 3 | | 1 | | | | | 13 |
| Manawaty County | 1 | 1 | | | | | | | 1 | 3 |
| Oroua County | 2 | | | | | | | | | 2 |
| Pohangina County | | 1 | | | | | | | | 1 |
| Horowhenua County | 2 | | | | | | | | | 2 |
| Bunnythorpe | | 1 | | | | | | 1 | | 2 |
| Ashhurst | | | 2 | 3 | 1 | | | | | 6 |
| Feilding | 6 | 3 | 4 | 1 | | | 2 | 1 | | 17 |
| Rongotea | 2 | | | | | | | | | 2 |
| Tokomaru | | 1 | | | | | | | | 1 |
| Sanson | 1 | | | | | | | | | 1 |
| Bulls | | 1 | 1 | | | | | | | 2 |
| Shannon | | 1 | | | | | | | | 1 |
| Foxton | | 2 | | 1 | | 1 | 1 | | 1 | 6 |
| Foxton Beach | 1 | 1 | | | | | | | | 2 |
| Woodville | | 1 | 1 | | 1 | | | 1 | | 4 |
| Levin | | 1 | | | | 1 | | | | 2 |
| Dannevirke | | 1 | | | | | | | | 1 |
| Total | 21 | 18 | 11 | 5 | 3 | 2 | 3 | 3 | 2 | 68 |
| Per Cent | 30.88 | 26.47 | 16.18 | 7.35 | 4.41 | 2.94 | 4.41 | 4.41 | 2.94 | 99.99 |

tertiary industries. If 33.3 per cent, or more, of an urban settlement's workforce takes employment in another centre it could be said that the settlement has become a residential dormitory of the employment centre.

Of those towns from which commuters travel to the Palmerston North Urban Area daily, Ashhurst with 43 per cent is the only centre to have achieved dormitory status if a figure of 33.3 per cent is assumed to be the "watershed" of urban function in this respect although Rongotea has almost become a dormitory.[10] A survey conducted in 1960 by students of the Palmerston North Teachers' College showed that Ashhurst, then, had just under 33 per cent of its workforce employed in Palmerston North.[11] Since this proportion has risen by some 10 per cent in the eight intervening years the town appears to have become firmly established as a dormitory. So far as is known no figures of a similar nature exist for other Manawatu centres so that no comparisons may be made but Rongotea and Bunnythorpe appear to be the centres which are next nearest dormitory status.

In Ashhurst the overall growth rate of the town (See Tables III and IV, Appendix D), has not been matched by a marked growth rate in employment opportunities so that the assumption that Ashhurst's growth is due to its popularity as a residential centre for the Palmerston North Urban Area is probably valid.

TABLE VIII

NUMBER AND PERCENTAGE OF ACTIVELY ENGAGED PERSONS COMMUTING TO THE PALMERSTON NORTH URBAN AREA FROM SUBURBAN SETTLEMENTS

| Settlement | Number Actively Engaged | Number Commuting | Percentage Commuting |
|---|---|---|---|
| Longburn | 209 * | 28 | 13.40 |
| Bunnythorpe | 179 * | 48 | 26.82 |
| Linton | 88 * | 15 | 17.04 |
| Ashhurst | 292 | 126 | 43.15 |
| Feilding | 3,099 | 308 | 12.52 |
| Rongotea | 122 | 40 | 32.79 |
| Tokomaru | 134 * | 18 | 13.43 |
| Sanson | 117 | 24 | 20.51 |
| Woodville | 546 | 42 | 7.69 |
| Bulls | 555 | 21 | 3.78 |
| Shannon | 509 | 28 | 5.50 |
| Foxton | 989 | 84 | 8.49 |
| Pahiatua | 893 | 12 | 1.34 |
| Foxton Beach | 180 | 9 | 5.00 |
| Marton | 1,589 | 3 | .19 |
| Levin | 3,882 | 15 | .39 |
| Dannevirke | 1,957 | 7 | .36 |
| Wanganui | 13,549 | 9 | .07 |
| | | 837 | |

* Estimates only, figures not available. These were worked out by the author by extrapolating from the settlements in the Manawatu for which figures were known. This was checked against national figures and found to approximate to the national position.

Sources: Survey Data and Department of Statistics.

Other settlements with over 15 per cent of their working populations travelling to the Palmerston North Urban Area are Rongotea, 32.7 per cent, Bunnythorpe 26.8 per cent, Sanson 20.5 per cent and Linton 17.0 per cent. Of these areas Sanson and Linton have shown population increases during the inter-censal period 1961-66. Sanson increased by 31 and Linton by 10 persons.

In both Rongotea and Bunnythorpe there were decreases of population of 9 and 89 persons respectively during the same period. No reason is apparent for these increases and decreases apart from the normal fluctuation of population due to births and deaths except that in Bunnythorpe the decrease may be accounted for by the removal of resident railways staff and the reduction of staff employed by the New Zealand Electricity Department.

## DISTANCES AND ANOMALIES

As may be expected the percentage of the local resident work force travelling daily to the Palmerston North Urban Area tends to decrease with distance from the Urban Area centre, (Table IX). There is, in fact, a good correlation between these two variables. [12] Reference to Table IX shows that there is a relatively steady decline in the percentage of the working population of the small towns and villages who travel to the Urban Area, as distance increases, from Bunnythorpe, 6.5 miles distant, to Sanson at 14.5 miles distant. With the exception of Woodville all the towns in this group are situated on the Manawatu plain and have good communications access with the Urban Area over relatively straight, good surfaced roads. The decrease shown by Woodville could be accounted for, possibly in large part, by the barrier presented to the traveller by the Manawatu River Gorge. Linton residents may be drawn to the nearby Military Camp, while Feilding has sufficient opportunities to retain much of its resident work force. The effect of Ohakea Air Force Base appears in the lower

proportion travelling daily from Bulls while the proportion from Pahiatua is probably affected by the Gorge as in the case with Woodville.

TABLE IX

DISTANCE, NUMBER AND PERCENTAGE OF THE ACTIVE WORKFORCE TRAVELLING TO THE PALMERSTON NORTH URBAN AREA

| Settlement | Main Road Distances (Miles) | Number | Per Cent Actively Engaged |
|---|---|---|---|
| Longburn | 4.0 | 28 | 13.40 |
| Bunnythorpe | 6.5 | 48 | 26.82 |
| Linton | 8.0 | 15 | 17.04 |
| Ashhurst | 9.0 | 126 | 43.15 |
| Feilding | 12.5 | 308 | 12.52 |
| Rongotea | 12.5 | 40 | 32.79 |
| Tokomaru | 12.5 | 18 | 13.43 |
| Sanson | 14.5 | 24 | 20.51 |
| Woodville | 17.0 | 42 | 7.69 |
| Bulls | 19.0 | 21 | 3.78 |
| Shannon | 20.5 | 28 | 5.50 |
| Foxton | 23.5 | 84 | 8.49 |
| Pahiatua | 27.0 | 12 | 1.34 |
| Foxton Beach | 27.0 | 9 | 5.00 |
| Marton | 27.5 | 3 | .19 |
| Levin | 31.0 | 15 | .39 |
| Dannevirke | 33.5 | 7 | .36 |
| Wanganui | 46.0 | 9 | .07 |
| | | 837 | |

With respect to those towns at a distance greater than seventeen miles the most potent factor appears to be the distance involved in daily travel. As distance increases work opportunities near home tend to become greater. Shannon for example is 20.5 miles by road from Palmerston North and 10.5 miles from

Levin. It may be assumed that, given adequate transport, the attraction of Levin, at least for some occupational types, is greater than Palmerston North.

In the case of Wanganui those who travel from that city do so for a specific reason. In their particular occupation no work was available in Wanganui and opportunities existed in Palmerston North. The employing firm provides transport and pays travelling time to these employees, but in due course when the position relating to that particular occupation improves in the Wanganui district it is likely that these persons will again take employment there.

FOOTNOTES

1. Schnore, 1954, 336.

2. The Co-operative Wholesale Society's Freezing Works at Longburn, for example, provides accommodation for 70 unmarried seasonal workers who often travel home on the weekend. (G.H. Trevor, C.W.S. Longburn, Personal Communication).

3. Since Teachers' College students receive a salary they were classed as workers in terms of this study and included as commuters where applicable. Other students who received no salary were excluded.

4. Where two or more reasons were recorded the first given was deemed to be chief and punched on the computer card accordingly.

5. Hunter and Reid, 1968, 44.

6. Duncan, 1956, 53, see also Schnore, 1954, 336.

7. Informal interviews were conducted with some 20 unmarried young people who were living in city flats. In almost every case the person had previously commuted but had chosen to live in the city in order to avoid the inconvenience of travel.

8. Hunter and Reid, 1968, 25.

9. Conacher, 1964, 25.

10. Except that each town has been examined in terms of those of its residents who travel daily to the Palmerston North Urban Area. It could be that the position differs in some

cases but this is not known. For example, it could safely be assumed that residents of Sanson and Bulls are employed at Ohakea Air Force Station and should this be the case the proportion of commuters from that place could exceed 33.3 per cent of the working population. This would make each settlement a dormitory under the terms of the proposal put forward here.

11. Franklin, 1961, 87.

12. A correlation co-efficient of -0.6845 was calculated using the formula,

$$r = \frac{N\Sigma xy - (\Sigma x)(\Sigma y)}{\sqrt{[N\Sigma x^2 - (\Sigma x)^2][N\Sigma y^2 - (\Sigma y)^2]}}$$

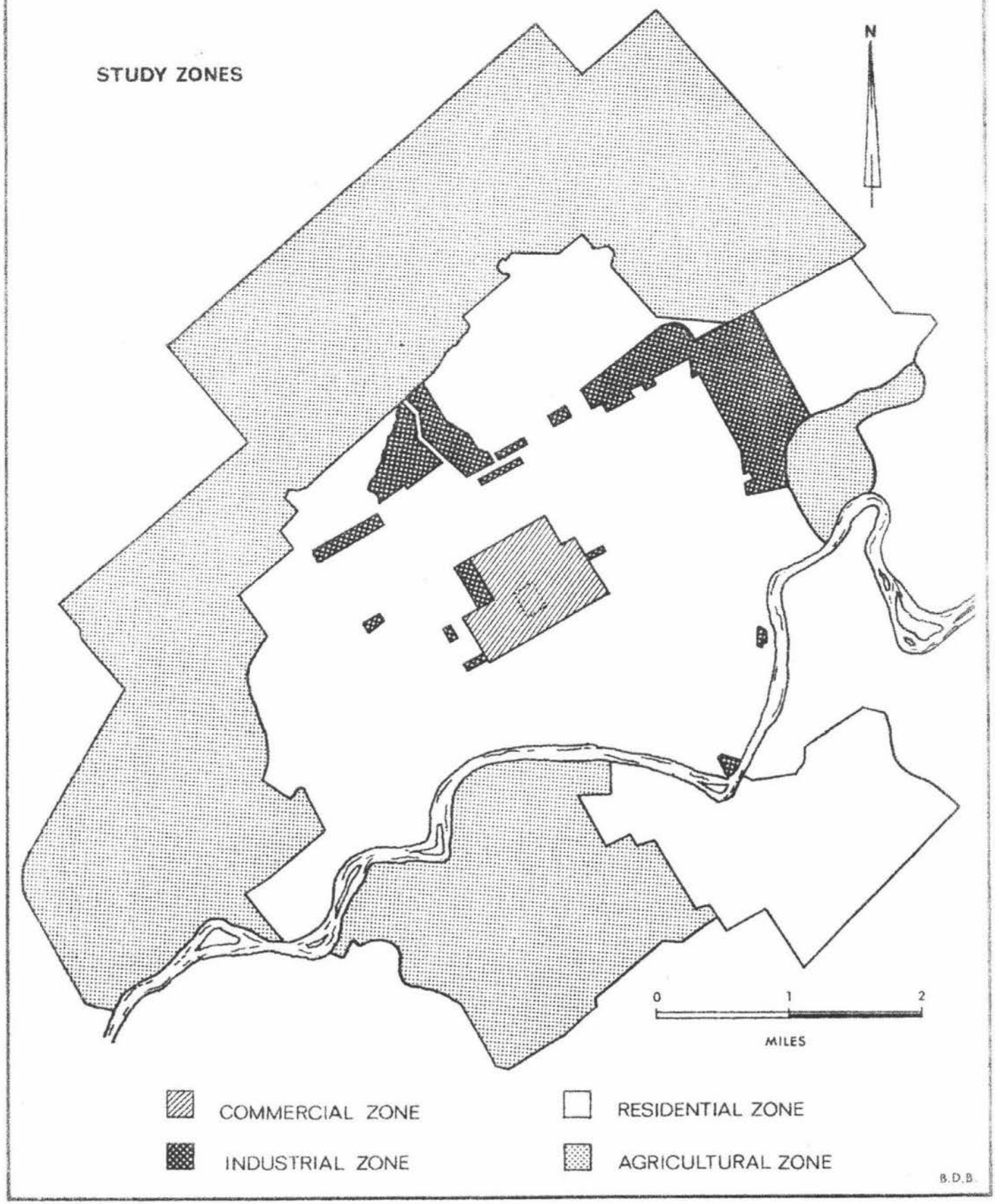
# CHAPTER 3

## DESTINATIONS OF COMMUTERS

Within an urban area the various groupings of land use can be viewed as either attracting or dispersing areas for urban area workers. Those areas which are largely given over to commercial or industrial use will be, for the most part, attracting areas as the central business district is, while the dispersing areas will be those in which land use is generally residential. In order to study the destinations of Palmerston North Urban Area workers the zoning map of Palmerston North City, as prepared by the City Council's Town Planning Office has been used here as a base and from it the city has been divided into three zones, the Commercial Zone, which may be equated with the Central Area, the Industrial Zone, including all those areas zoned Industrial under the Palmerston North District Scheme, and the Residential Zone, that is, the rest of the city, (See Fig. 3). The Agricultural Zone is the area of land lying between the city boundary and the Palmerston North Urban Area boundary. [1] In this chapter the various zones will be examined as areas attracting commuters.

In the Palmerston North Urban Area the commercial zone of the city is the area of greatest attraction and here some 45.2 per cent of the Urban Area's workforce concentrates its daily work trip. The industrial areas included in the Industrial Zone are somewhat dispersed in the city and, excluding those industrial plants located within the commercial zone, attract 13.7 per cent

FIGURE 3


STUDY ZONES
N
0
1
2
MILES
COMMERCIAL ZONE
RESIDENTIAL ZONE
INDUSTRIAL ZONE
AGRICULTURAL ZONE
B.D.B.

of the Urban Area's workforce. In scattered locations distributed throughout the rest of the city, the residential zone, are to be found the work places of a further 23.8 per cent of the working population of the Urban Area. A further 6.7 per cent of the workforce is engaged in Palmerston North City but with no fixed place of work, these being builders and associated tradesmen with no depot or yard, door to door salesmen, and workers of similar occupation. Builders and associated tradesmen in this category are usually those whose businesses are small while door to door salesmen and those in similar categories often operate for out-of-town firms. The agricultural zone accounts for the remainder of the workforce of the Palmerston North Urban Area amounting to 10 5 per cent of the total. Here, land use is largely rural although there are some concentrations of other uses.

THE COMMERCIAL ZONE

In common with most other cities of the world the greatest concentration of work places in the Urban Area is located in the Commercial Zone of Palmerston North City. [2] Here are to be found the majority of the commercial interests and the retailing and wholesaling outlets which contribute to the city's regional importance. While some industry is located here, the removal of the railway from the centre of the city to the western side has tended to draw industry from the Commercial Zone to the industrial sites adjacent to its new location.

TABLE X

DISTRIBUTION OF PLACES OF EMPLOYMENT IN THE PALMERSTON NORTH URBAN AREA, 1968-9

| Area | Retail | Wholesale and Storage | Commercial and Social Services | Manfact. and Service Industry | Primary Industry | Total | Number of Units |
|---|---|---|---|---|---|---|---|
| | Per Cent | Per Cent | Per Cent | Per Cent | Per Cent | Per Cent | |
| Commercial Zone | 47.9 | 8.7 | 29.3 | 14.1 | - | 100.0 | 944 |
| Industrial Zone | 11.5 | 21.3 | 1.1 | 66.1 | - | 100.0 | 175 |
| Residential Zone | 55.4 | 9.4 | 25.1 | 10.1 | - | 100.0 | 433 |
| Agricultural Zone | 3.2 | 0.8 | 4.0 | 4.0 | 88.0 | 100.0 | 125 |
| Total | 42.6 | 9.6 | 23.3 | 17.8 | 6.4 | 99.7 | 1,677 |

Within the Commercial Zone the highest concentration of employment is encountered and here the greatest economic function is that of retailing. For the most part the city's shops are located here and it is only in a few suburban areas and at Longburn that other concentrations of retailing are found but these are usually limited in scope and size.

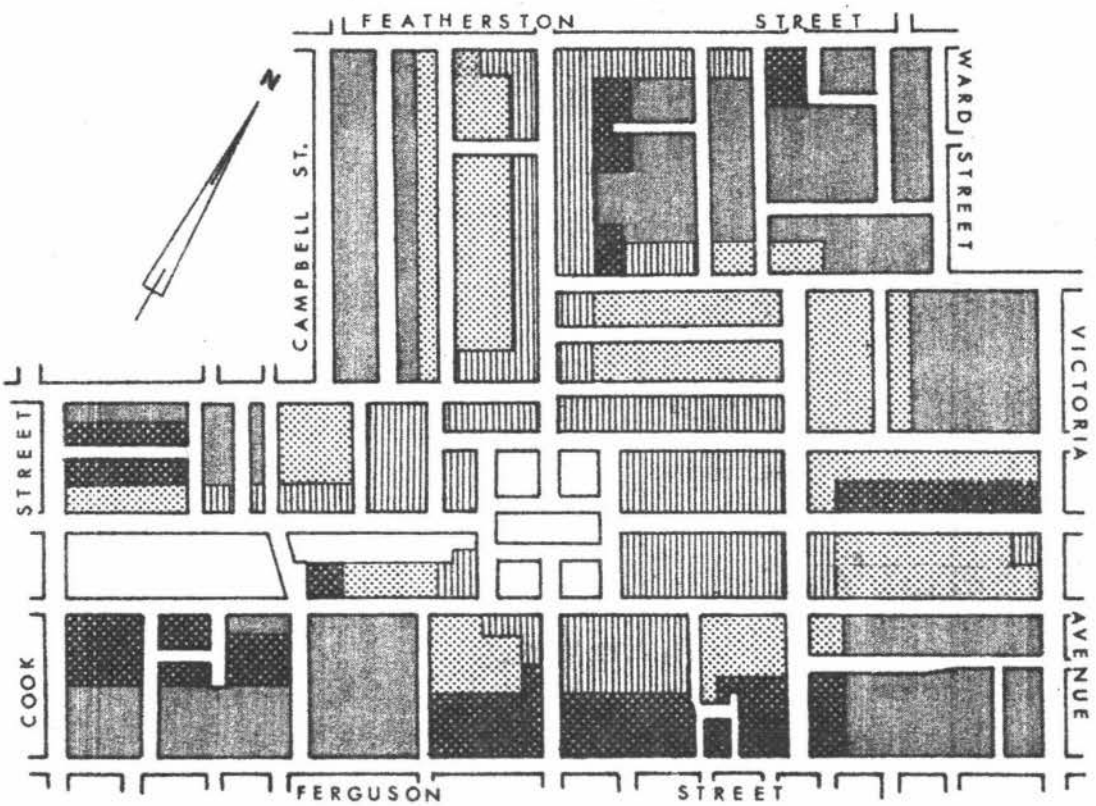
As might be expected, the commercial professions, finance and insurance functions, too, predominate here. Reference to Table XI shows that while the Commercial Zone has the largest concentrations of employers and workforce, the percentage of the workforce which commutes is higher for the Commercial Zone than for any other part of the Palmerston North Urban Area. (See Fig. 4).

Commuters to the Commercial Zone engage in a variety of occupational types. Of the 445 persons interviewed the largest proportion of the group was engaged in clerical work. Sales workers were not so well represented in the group interviewed but an examination of the field work data sheets leads to the conclusion that sales occupations are not so attractive to commuters. This is possibly due to the necessity to work late on late shopping nights, the consequently late hours for travelling home that would be involved in such occupations and the "status" thought by some to be inherent in commercial occupations. Reference to Table XII illustrates the attraction which the various occupational types have for commuters to the Commercial Zone.

FIGURE 4

**COMMERCIAL ZONE**

**GENERALISED LAND USE**




Residential

Retail

Commercial

Industrial

Open Space and Recreational

0 16 32

CHAINS

SOURCE: P.N.C.C. Town Planning Office

B.D.B.

TABLE XI

DISTRIBUTION OF WORK PLACES, WORKFORCE AND COMMUTERS IN THE PALMERSTON NORTH URBAN AREA

| Area | Units Surveyed | Total Workforce | Number of Commuters | Commuters as a Percentage of Workforce in each Area |
|---|---|---|---|---|
| Commercial Zone | 944 | 9,455 | 744 | 7.9 |
| Industrial Zone | 175 | 2,866 | 172 | 6.0 |
| Residential Zone | 433 | 4,971 | 159 | 3.2 |
| City Workers with no Fixed Workplace | 65 | 1,409 | - | - |
| City Totals | 1,617 | 18,701 | 1,075 | 5.7 |
| Agricultural Zone | 125 | 2,201 | 119 | 5.4 |
| Totals Palmerston North Urban Area | 1,742 | 20,902 | 1,194 | 5.7 |

TABLE XII

PREDOMINANT ACTIVITY OF THE OCCUPATIONAL UNIT AND NUMBER OF COMMUTERS ENGAGED, COMMERCIAL ZONE [3]

| Unit Type | Number of Units | Percentage of Units in each type | Number of Commuters | Percentage of Commuters in each type |
|---|---|---|---|---|
| Sales | 494 | 52.3 | 246 | 33.1 |
| Clerical | 306 | 32.4 | 324 | 43.5 |
| Manufacturing & Service Ind. | 138 | 14.6 | 135 | 18.1 |
| Other | 6 | 0.6 | 39 | 5.2 |
| Totals | 944 | 99.9 | 744 | 99.9 |

Sales Occupations

(Included in this group are sales occupations in both wholesale and retail firms).

Within the Commercial Zone retailing units vary in size from those employing one person to those larger concerns in which more than one hundred persons may be employed. In this type of unit occupations vary from professional and administrative workers to clerical and sales workers. Among those interviewed were many clerical workers engaged in firms, the basic function of which was retail sales.

Wholesaling houses showed the same bias as retailing, and

often where commuters were engaged in such firms, the commuter was travelling to a clerical occupation rather than a sales occupation. Many of these firms, also, were employers of only a few workers so that the opportunity for commuters to engage in an occupation within a wholesaling firm was limited. In all 33.1 per cent of commuters to the Commercial Zone were employed in sales occupations either in retailing or wholesaling businesses.

Clerical Occupations

The group of clerical occupations covers a range of commercial and financial businesses where the predominant activity is concerned with accounting, banking, insurance and related types of business as well as those occupations more commonly accepted as "commercial". One considers in this respect the offices of retailing and wholesaling houses and the recording of business transactions. In Palmerston North the growth of this occupational type is a reflection of the prosperity of the city and its contributory hinterland. It is the clerical occupations which attract the greatest number of commuters to the zone, 43.5 per cent of the commuters to the zone being engaged within this group of occupations. Security of occupation, hours of work and conditions of employment are most probably the factors which influence workers to accept positions in clerical occupations rather than sales occupations.

Manufacturing and Service Industry

Manufacturing and service industries account for 138 units

of those surveyed within the commercial zone. In most cases manufacturing plants were small employing only five or six persons but the majority of workers commuting to manufacturing and service industry here were engaged in the few larger plants, some of which employ considerable numbers of workers. Smaller plant and staff size of commercial zone manufacturing firms limit the number of positions available and this is reflected, in turn, in the lower proportion of 18.1 per cent of commuters engaged in these occupations.

Service industry in the commercial zone, as elsewhere in the Urban Area, is usually a smaller type of concern, and although there are commuters to such industries, the numbers are small in keeping with the total employment figures. Those who commute to service industries are often engaged as apprentices in such trades as motor vehicle repair and maintenance although there are those who find employment in labouring occupations in such service work as dry cleaning.

THE INDUSTRIAL ZONE

In Palmerston North City some thirteen separate areas are zoned for industrial uses under the City's Town Planning Scheme. In all cases industries exist at present in such areas but in some there are considerable areas of vacant land where expansion of industry could take place and, consequently, employment expand. The major area designated "industrial" is that lying adjacent to the railway at Milson. Within this area concentrations occur along

Tremaine Avenue north east of Milson's Line, in Keith Street, and around Pirani Place. Other larger sites include the Glaxo installation in Botanical Road, the industrial areas in West Street and Joseph Street, the Waldegrave-Bourke-Campbell Street complex and Roxburgh Crescent. In the industrial zone are located 175 units employing a total workforce of 2,866 of which 172 or 6.0 per cent were commuters.

Reference to Table XIII shows that, as may be anticipated, the predominant activity in the industrial zone is manufacturing and service industry. Wholesale and storage businesses account for a further 18.3 per cent of the businesses while the remaining 10.3 per cent is composed of retailing, commercial, financial and insurance concerns.

Within the industrial zone are located manufacturing concerns producing such diverse products as electric blankets, packaging materials, precision goods and tools, manufactured and processed foods and high quality furniture. These types of production enterprises call for a variety of occupation types and skills from labouring of an unskilled nature to highly skilled professional and technical tasks.

Manufacturing attracts the greatest number of commuters in this zone of the Urban Area, while the greatest proportion of the remainder are attracted to service industries. Other occupations account for very few commuters and are represented in only eighteen businesses.

Manufacturing and Service Industry

Work types within manufacturing and service industry cover, as has been noted, a wide range of occupational types. Within the manufacturing businesses a range of apprenticeships is offered in such occupations as engineering, cabinet-making and joinery, plumbing, drainlaying and sheetmetal working, and the skilled occupations associated with the building industry.

Other manufacturing types operating within the industrial zone are concerned with the production of artificial flowers, bedding, plastic goods, woollens and other garments and textiles, chemicals and pharmaceuticals. As may be expected, 87.2 per cent, representing the bulk of commuters to the zone are engaged in manufacturing and service industry.

Wholesale and Storage

Those firms which deal in wholesale selling have been included under this heading as have those work places dealing with the storage and handling of merchandise and goods for sale other than to the public generally. In the former group are firms dealing in motor parts, canvas goods and foods, while some food-stuffs, skins and hides, motor spirit and furniture are among the range of items handled by storage concerns. Within this group, occupations were not generally skilled except for those associated with management and merchandising. In this category were some workers who had undertaken employment with oil companies as trainee

executives and who were expected to undertake management training courses. This type of occupation had proved attractive to commuters and a proportion of those travelling to wholesale and storage firms could be classed as executive trainees. Wholesale and storage occupations, however, attract a smaller proportion of commuters to the industrial zone, some 11.0 per cent of those travelling being employed in the group.

Other

Other firms within the industrial zone comprise food shops, dairies and some offices. For the most part these activities are located where industrial areas abut the commercial zone, but some appear within the industrial concentrations. Where these are food shops and dairies they serve as local convenience shops for industrial employees and to some extent the travelling public. For the most part these are small businesses operated by one or two people and do not, therefore attract commuters to any extent, in fact only 3 persons travelled to occupations in this group, that is, 1.7 per cent of the total travelling to the industrial zone.

TABLE XIII

PREDOMINANT ACTIVITY OF THE OCCUPATIONAL UNIT AND NUMBER OF COMMUTERS ENGAGED, INDUSTRIAL ZONE. [3]

| Unit Type | Number of Units | Percentage of units in each type | Number of Commuters | Percentage of Commuters in each type |
|---|---|---|---|---|
| Manufact & Service Industry | 125 | 71.4 | 150 | 87.2 |
| Wholesale & Storage | 32 | 18.3 | 19 | 11.0 |
| Other | 18 | 10.3 | 3 | 1.7 |
| | 175 | 100.0 | 172 | 99.9 |

RESIDENTIAL ZONE

Scattered throughout the residential zone are a number of local shopping areas. Of these the largest is that at Terrace End. For the most part these shopping complexes cater for local residents, selling food, clothing, and in some cases, hardware. They are essentially local convenience retail areas and provide a service to the local housewife although where such shops are located on main roads some attempt is made to attract the travelling public. Retailers here tend to avoid the higher priced or exclusive lines which are usually carried by businesses in the commercial zone.

In addition to shopping areas, other uses are scattered throughout the residential zone. Dairies are common, and there

are few places in the city which are not within a quarter-mile radius of a dairy. Manufacturing and service industries, commercial businesses and wholesale and storage concerns together with professional offices are sometimes located in what is essentially residentially zoned land. In most cases such concerns are scattered and there are few concentrations.

TABLE XIV

PREDOMINANT ACTIVITY OF THE OCCUPATIONAL UNIT AND NUMBER OF COMMUTERS ENGAGED, RESIDENTIAL ZONE.[3]

| Unit Type | Number of Units | Percentage of units in each type | Number of Commuters | Percentage of Commuters in each type |
|---|---|---|---|---|
| Retail | 223 | 51.5 | 19 | 11.9 |
| Manufact. & Service Ind. | 80 | 18.5 | 41 | 25.8 |
| Commerce | 15 | 3.4 | 37 | 23.3 |
| Professional Services | 99 | 22.9 | 57 | 35.8 |
| Wholesale & Storage | 16 | 3.7 | 5 | 3.1 |
| | 433 | 100.0 | 159 | 99.9 |

Retailing

Predominantly, retailing units tend to be small and employ only one or two assistants. Food, hardware and book shops and fruiterers form the basis of most of the city's "neighbourhood" shopping areas, while dairies are scattered beyond the concentrations.

Since retailing units are generally small, few commuters are attracted to these occupations. Of late there has been some development of the larger "supermarket" type of retailing in the residential zone, and, together with the well established larger concerns may provide some decentralisation of business and increase the opportunities for work outside the commercial and industrial zones.

Manufacturing and Service Industry

Industrial concerns located in the residential zone tend to be of a backyard or cottage type. Concentrations of some larger ones occur however in the Main Street East-Napier Road area and towards the western part of the commercial zone near to Main Street west. Land occupied by some of the larger concerns, at one time classified as residential has now been re-zoned and is classed as industrial. In this study firms on such land have been included in the industrial zone with other major industrial sites. While the units classed as industrial are, for the most part small and do not attract large numbers of employees, some 25.8 per cent of the commuters to this area are engaged in such concerns. It should be noted, however, that there is a tendency for firms attracting commuting labour to be located either close to the boundary of either the commercial or industrial zones or near to a bus route.

Commerce

Commercial occupations attract 23.3 per cent of the workers

travelling to work destinations in this area of the city. Included in this group of occupations is the New Zealand Railways establishment which accounts for the majority of commuters to the area. [4] Apart from the railways few concerns in the zone attracted commuters except those which were adjacent to the commercial zone in Rangitikei Street to the north-west of Featherston Street.

Professional Services

The number of commuters in this classification is distorted by the presence in the zone of the Palmerston North Public Hospital. This institution attracts just under forty or 24.5 per cent of commuters. Apart from the Public Hospital other professional services are provided by the Awapuni Hospital, the surgeries of general medical practitioners, private hospitals and convalescent homes, and the offices of some accountants, architects and other professional occupations of a similar type.

Apart from the hospitals, the attraction of these types of services is minimal in terms of commuters and usually, practices or offices are operated by one or two persons. Of the group travelling to occupations of this type, the schools absorb the greatest part of the commuters and altogether a total of 35.8 per cent of the commuters to the zone are employed in professional occupations.

Wholesale & Storage

Attracting few commuters, those wholesale and storage

businesses which were located in the zone were small in size. Bulk depots for non-perishable goods form the basis of the units in this classification. There were sixteen units which attracted only five or 3.1 per cent of the total commuters to the zone.

THE AGRICULTURAL ZONE

For the most part the agricultural zone, that is, the area lying between the city boundary and the Urban Area boundary, is given over to farming. In some parts of the zone farming is of the intensive type such as market gardens, nurseries and poultry farms, but larger areas are occupied by dairy and sheep farms.

A major concentration of employment occurs just beyond the city at Fitzherbert where Massey University, the Department of Scientific and Industrial Research and the Dairy Research Institute are located. Teaching and research are the basic functions of this concentration.

Longburn, the only township within the agricultural zone is an industrial site for three large concerns, while nearby is located the industrial and teaching complex operated by a religious group. On the other side of the Urban Area there has been some overspill of industry to the north east along Napier Road. These industries, however, are small concerns attracting no commuters from beyond the Palmerston North Urban Area boundary, but relying on labour resident in Palmerston North City and the agricultural zone.

While the major concentrations of employment in the agricultural zone occur at Longburn and Fitzherbert, differing types of work are undertaken at each of these places. At Longburn the major work type is that associated with the processing of meat and dairy produce while that at Fitzherbert is largely professional. Throughout the rest of the zone work of a primary industrial type is undertaken.

The predominant work type throughout the zone is, naturally, that associated with the production of primary products. Farms and agricultural and horticultural holdings are operated by resident owners or operators and there was no evidence that commuters were attracted to these types of work.

Manufacturing, Service and Processing Industry

The major attraction for commuters from beyond into the agricultural zone is in the manufacturing and processing industries, as reference to Table XV demonstrates.

For the most part, work in the manufacturing, service and processing industries is of an unskilled, labouring nature although there are some technical operatives engaged in the meat freezing and dairy processing industries. Other types of industry included an engineering plant and upholsterers both of which employed skilled and semi-skilled workers. Manufacturing, service and processing industry accounts for 52.9 per cent of the commuters to the agricultural zone from locations beyond.

TABLE XV

PREDOMINANT ACTIVITY OF THE OCCUPATIONAL UNIT AND NUMBER OF COMMUTERS ENGAGED. AGRICULTURAL ZONE. [3]

| Unit Type | Number of Units | Percentage of units in each type | Number of Commuters | Percentage of Commuters in each type |
|---|---|---|---|---|
| Manufacturing, Service & Processing Ind. | 7 | 5.6 | 63 | 52.9 |
| Retail | 3 | 2.4 | Nil | Nil |
| Education & Research | 4 | 3.2 | 56 | 47.1 |
| Other | 111 | 88.8 | Nil | Nil |
| Totals | 125 | 100.0 | 119 | 100.0 |

Education and Research

Massey University, the Department of Scientific and Industrial Research and the Dairy Research Institute provide opportunities for this type of occupation. In these institutions large numbers of professionals are engaged but there are numerous clerical, technical and service occupations as well. Reference to Table XV demonstrates the attraction which employment in these institutions has for commuters, and as well many Palmerston North City residents are engaged there.

Retail

The few retail concerns operating in the agricultural zone are located at Longburn. These are small shops of the local "dairy" type and are operated by local, mainly family labour.

The hotel at Longburn also has a staff of local employees. No commuters were recorded working in this group.

Other

The group here designated "other" includes the primary industries, government services such as the Post and Telegraph offices, and the Railways Department. There were no instances discovered of commuters to occupations within this group, although there was some out-commuting from the city.

SUMMARY

The most popular destination areas for commuters to the Palmerston North Urban Area are the commercial and industrial zones. While it may be expected that these zones offer occupations which are attractive to commuters other reasons must be sought to explain the discrepancies in the percentages of commuters working in these and other parts of the Urban Area, (See Table XVI).

In the commercial zone the proportion of commuters employed exceeds that which might be expected from an examination of the proportion of the total workforce engaged in the zone. It is in the commercial zone, however, that the range of occupations is greatest and the variety and availability of occupations appears to be an important factor in drawing the female component of the commuting workforce. The type of occupation offered in the commercial zone also has a strong influence upon female commuters,

for it is here that the clerical and sales occupations are concentrated. While manufacturing occupations are not as attractive to female labour as either clerical or sales occupations, those which do attract females, such as those in clothing and textile industries, are often located in the commercial zone.

TABLE XVI

PERCENTAGE OF WORKFORCE AND COMMUTERS BY DESTINATION ZONE, PALMERSTON NORTH URBAN AREA.

| Area | Total Workforce | Percentage of Total in each area. | Number of Commuters | Percentage of Commuters in each area |
|---|---|---|---|---|
| Commercial Zone | 9,455 | 45.2 | 744 | 62.3 |
| Industrial Zone | 2,866 | 13.7 | 172 | 14.5 |
| Residential Zone | 4,971 | 23.8 | 159 | 13.3 |
| City workers with no Fixed Workplace | 1,409 | 6.7 | Nil | Nil |
| City Totals | 18,701 | 89.5 | 1,075 | 90.1 |
| Agricultural Zone | 2,201 | 10.5 | 119 | 9.9 |
| Totals Palmerston North Urban Area | 20,902 | 100.0 | 1,194 | 100.0 |

Transport is another factor which operates in favour of the commuter choosing a commercial zone work location. Where the commuter relies upon public transport in order to make the journey

to work, there appears to be an objection to breaking the journey and engaging a second service. Since transport routes have their destination terminuses, on inward journeys, in the commercial zone, it is this zone which proves attractive to commuters by public transport. In the interviews no case was discovered where a break in the journey was made, commuters preferring to select a work site which was within easy walking distance of either the terminus, or the route. There are, moreover, few opportunities to break commuting trips by public transport for few services to the city connect with internal services which focus on the Square so that delays in travel would be encountered.

The city industrial zone attracts commuters in approximate proportion to the total numbers employed in this location. This may be anticipated to some degree, but the distribution of industrial sites within the industrial zone leads to the conclusion that there is a degree of attractiveness in the type of occupation offered. While many tasks undertaken may be of an unskilled type, there are many occupations located in this zone which attract workers with skills or who wish, by way of apprenticeship, to learn skilled or semi-skilled trades. Again, since most commuters to the industrial zone are males, the likelihood of their having access to private transport is enhanced.

The area designated the residential zone attracts a total of 13.3 per cent of the commuters which is 10.5 per cent less than might be expected. Of this 13.3 per cent some 3.3 per cent

are workers travelling to the Public Hospital.

There appear to be two major influences operating against commuters travelling to this zone. Transport, which was noted as attracting commuters to the commercial zone, operates against destinations here. In order to reach a work site, the commuter relying on public transport would be obliged, in most cases, to engage a second transport service and this is not always feasible or convenient. The second influence is that of size of work unit. For the most part firms are small and family owned and operated. Often, it was found, where outside labour was employed positions were taken by workers whose homes were within walking distance of the site, or who had private transport.

In the agricultural zone, the proportion of commuters is slightly less than might be expected and while the majority of occupational types, other than farming, call for no particular skills, the presence in the zone of processing industries provides a range of occupations in which considerable sums of money may be earned. It is for this reason that the agricultural zone is attractive to commuters.

FOOTNOTES

1. The terms "Palmerston North Urban Area" and "Urban Area" are to be considered synonymous and refer to the area enclosed by the Palmerston North Urban Area boundary as devised by the Statistics Department.

2. Carroll, 1952, 280.

3. Tables XII, XIII, XIV and XV were devised from field work data sheets. In each case the predominant activity of an employment unit was used to assign the unit to a major group. There may be, however, a variety of occupations within a unit, e.g., a firm whose predominant activity is manufacturing would be assigned to that category but may also employ clerical workers, executives and, perhaps, professional workers as well as those who are involved in the production of goods.

4. Although the New Zealand Railways as a whole could be classed as a service industry, it has been included here as clerical since the majority of tasks undertaken by the Railways in Palmerston North are of a clerical nature. Some Railways workers, however, were assigned to other groups, e.g., Line Gangs were classed as workers with no fixed place of work.

# CHAPTER 4

## TRANSPORT AND THE COMMUTER

The ease with which a person can reach his place of work plays a significant part in his decision to take employment in an area other than one which is near his home. In the Palmerston North Urban Area 94.3 per cent of the work force lives within the confines of the Urban Area although no specific relative information is available to show the relationships between residential areas and work sites. A report of information on the journey to work in Palmerston North City is available, together with a wealth of other information in Austin's work on traffic engineering in Palmerston North. [1]

The availability of transport, both public and private, has allowed the remaining 5.7 per cent of the Urban Area's work force to live at varying distances beyond the Urban Area boundary. The convenience of public transport services, the high rate of motor vehicle ownership and the quality of roads in the Manawatu network make access to the Palmerston North Urban Area a matter of little difficulty.

### TYPES OF TRANSPORT

The most popular transport type used by commuters to the Palmerston North Urban Area is the private motor vehicle. Of the 445 commuters interviewed, a total of 303 or 68.1 per cent travelled by private transport and the remaining 142 or 31.9 per

cent by public means. An analysis of these figures is given in Table XVII.

TABLE XVII

TRANSPORT TYPE USED BY COMMUTERS TO THE PALMERSTON NORTH URBAN AREA

| Private | | Public | |
|---|---|---|---|
| Own Car | 166 | | |
| Friend's Car | 91 | Bus | 142 |
| Parent's Car | 6 | | |
| Spouse's Car | 6 | | |
| Firm's Vehicle | 20 | | |
| Motor Cycle | 12 | Grand Total | 445 |
| Bicycle | 2 | | |
| Total Private | 303 | | |

## Private Motor Cars

Commuters using private transport, especially those using their own car, do so because of the convenience and independence inherent in this form of transport. No time is lost during the journey to work as there would be if public transport were used. The convenience of being able to shop or to visit friends on the way to and from work, or during meal breaks makes the private motor vehicle an attractive form of transport although the costs involved are higher for private than for public transport.

## Ride Sharing

Ride sharing arrangements were made by 103 commuters in order to make the journey to work. Reference to Table XVII

shows that of these 103 commuters, ninety-one travelled with friends, six travelled with a parent and six with the commuter's spouse.

By means of ride sharing, travel costs are shared among a group of commuters and are therefore reduced per person. Some sacrifice of convenience may be necessary where ride-sharing arrangements are made, but the convenience is still greater than for those using public transport. Depending on the size of the group, ride-sharing can drastically reduce the cost of travel. In one case, for example, a group of five commuters travelled together. Each owned a motor vehicle and each took a turn to drive his own vehicle once a week. The cost of travel in this case was reduced for each member of the group to one-fifth of the total cost involved if each had driven his own car daily.

Where commuters travelled together with a member of the family, either parent or spouse, it was found that the driver of the vehicle often bore the entire cost of the trip although in some cases children of drivers made some contribution to the parent as a consideration for the convenience of travel and the savings that were possible.

Ride-sharing, and consequently cost-sharing, seemed to be quite a significant factor in the journey to work of a number of commuters although little specific information, of an accurate nature, could be obtained through the interviews. [2] As a consequence, no accurate report can be made on the effect of

distance travelled on the numbers per vehicle in ride-sharing arrangements.

Firm's vehicles were provided for the carriage of twenty commuters interviewed. Company cars were provided for firm's executives in some cases and in others the type of work undertaken made the provision of a motor vehicle necessary. These vehicles were provided on the understanding that they could be used for the transport of the driver between home and work.

Other firms, notably those connected with the building trade, provided vans in which groups of employees were transported to work. One worker, often a "leading hand", was appointed as driver with a duty to collect his passengers, usually members of his "team" and transport them to work, the site of which might vary according to the construction job being undertaken.

Where firms provided transport, free travel was regarded as one of the perquisites of the occupation and could be accepted as being in lieu of a higher salary or a travelling allowance.

Public Transport

Public transport as used by commuters to the Palmerston North Urban Area consists solely of motor buses. Bus routes connect nearly all the settlements in the area directly with the Urban Area, and generally, services are schedule to meet the demands of workers travelling to the City. Although many of the larger centres are linked by rail to the Urban Area, services are such that workers could not travel by rail and reach their

destinations at times appropriate to the commencement of work. (See Figure 5).

TRAVEL CONVENIENCE

An analysis of the figures for different types of travel from the varying origin areas leads to the conclusion that public transport is more popular for urban dwellers who commute than for rural residents. (See Table XVIII).

TABLE XVIII

PERCENTAGE OF COMMUTERS, URBAN AND RURAL USING VARYING TYPES OF TRANSPORT. 445 Commuters.

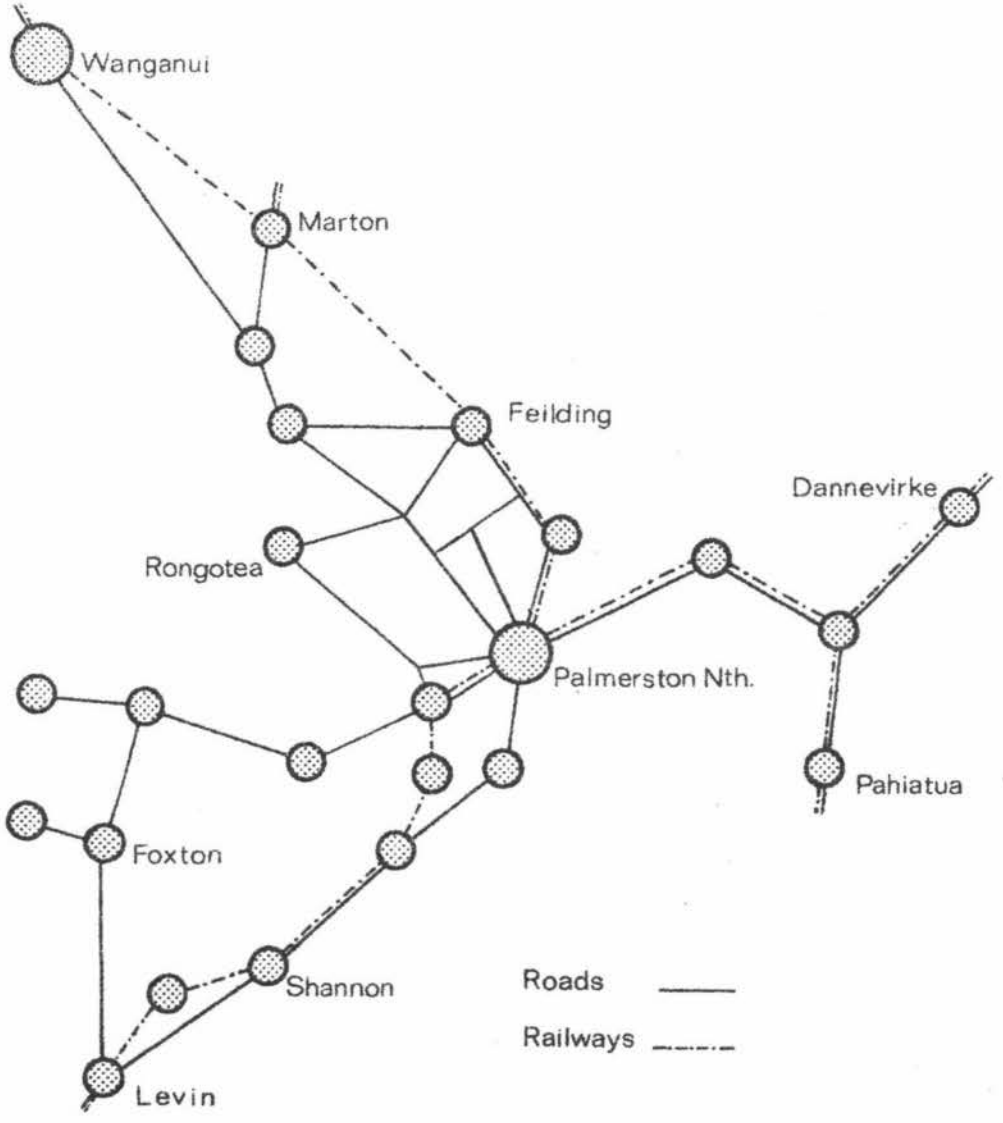
| TYPE | RURAL | URBAN | TOTAL |
|---|---|---|---|
| PRIVATE | | | |
| Own Car | 47.3 | 31.4 | 37.3 |
| Motor Cycle | 4.8 | 1.4 | 2.7 |
| Cycle | .6 | .3 | .4 |
| Friend's Car | 18.8 | 21.4 | 20.4 |
| Parent's Car | .6 | 1.8 | 1.3 |
| Spouse's Car | 1.2 | 1.4 | 1.3 |
| Firm's Vehicle | 1.2 | 6.4 | 4.5 |
| Total Private | 74.5 | 64.1 | 67.9 |
| PUBLIC | | | |
| Bus | 25.4 | 35.7 | 31.9 |
| GRAND TOTALS | 99.9 | 99.8 | 99.8 |

That public transport is more popular for urban dwellers who commute is due, it may be assumed, to the convenience which it affords to the urban resident. The urban dweller has little difficulty making a connection with a public service, either on a

FIGURE 5

**MAIN TRANSPORT ROUTES**

**( DIAGRAMMATIC )**




NOT TO SCALE

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bus route or at the terminus, for this, in most cases, is within a reasonable distance of the worker's residence and the opportunity to use public transport is thus greater than for the rural dweller. Here, the worker's residence may be separated by some distance from the bus route and there is, consequently, some difficulty experienced in connecting with scheduled services.

For rural dwellers the availability of private motor cars tends to be higher especially among the children of farmers, although no figures were taken. The second car, considered necessary by some as a means of transport for the farmer's wife is often, it was found, used by commuting children where difficulties were experienced in making a connection with public transport. On those occasions when the vehicle was otherwise required, arrangements were made within the family group to deliver the commuter to the bus route in the morning and to collect him in the evening. In these cases costs could be calculated on the basis of so many gallons of petrol per week, and often no cost to the commuter was involved, the parents undertaking to provide both the vehicle and the fuel.

The difficulty of obtaining public transport from the rural areas is reflected, too, in the dependence by some commuters on the motor cycle as a means of transport. The relatively low capital cost of the motor cycle and the economy of running it make it an attractive means of transport among the younger males although some female commuters reported using smaller models of

motor cycle of the "Suzuki" or "Honda" type. The motor cycle's main disadvantage, however, is the exposure the rider experiences in cold or wet weather.

It is easier for urban dwellers to travel to work with friends than for their rural counterparts and some 2.6 per cent more urban than rural residents travel by this method. This illustrates the proposition of Schnore who maintained that ride-sharing becomes increasingly difficult for rural dwellers as distance from the city centre increases. [3] Workers using firm's vehicles also tend, in the main, to be urban dwellers although some company managers and executives choose to live in rural areas. For the most part those who travel in vans provided by firms live in settlements where the collection of workers by the van driver is easily accomplished.

COST OF TRAVEL

In cases where commuters drove private motor vehicles to work very few appreciated the real cost of travel. Typically the response to the question of cost of travel was met by an answer which involved the calculation of the cost of so many gallons of petrol per week. When respondents were asked if they appreciated that other items were involved such as depreciation, tyres, oil, warrants of fitness, annual registration fees and insurance, the usual answer was, "we would have the car in any case, and would still be faced with the majority of these costs". It can be pointed out, however, that these costs can be calcul-

ated on a mileage basis on the assumption that a set number of miles per year will be covered by the typical motorist.

Since motorists could not give a more exact cost per mile for travel the following table does not give an accurate picture of the cost of travel, but is included here for reference.

TABLE XIX

ESTIMATED COST OF TRAVEL PER WEEK BY 445 COMMUTERS

(Dollars)

| Nil | Under 1 | 1.00 1.99 | 2.00 2.99 | 3.00 3.99 | 4.00 4.99 | 5.00 5.99 | 6.00 and Over |
|---|---|---|---|---|---|---|---|
| 45 | 18 | 102 | 142 | 77 | 39 | 9 | 13 |

Median Cost per week, $2.48

In January, 1965, the Ministry of Transport estimated the operating costs for private motor cars at that date. The operating costs are shown in Table XX, but in addition it should be borne in mind that standing costs including registration, insurance and warrants of fitness are legitimate charges against the cost of travel.

Taking these figures the weekly cost of travel can be calculated for private motor vehicle drivers from the various urban locations in the Manawatu from which commuters make a daily journey to the Palmerston North Urban Area. A comparison may then be made between Table XIX and Table XXI.

TABLE XX

ESTIMATED OPERATING COSTS FOR TYPICAL PRIVATE MOTOR VEHICLES IN NEW ZEALAND

(1964)

| Operating Costs | Cost in pence per mile | | |
|---|---|---|---|
| | Under 1000 c.c. | 1000 2000 c.c. | Over 2000 c.c. |
| Fuel | 1.10 | 1.54 | 1.75 |
| Oil | .03 | .03 | .03 |
| Tyres | .38 | .51 | .65 |
| Repairs & Maintenance | 1.93 | 2.13 | 2.29 |
| Depreciation | 1.91 | 2.23 | 2.36 |
| Total | 5.35 | 6.44 | 7.08 |
| Conversion to Decimal Currency | 4.40 cents | 5.30 cents | 5.90 cents |

Source: H. Porter, Ministry of Transport, Palmerston North, Pers Comm.

It can be seen that there is a considerable difference between the commuter's conception of the cost of travel and the actual running costs involved in the journey to work.

Commuters using other forms of transport, with the exception, perhaps, of those travelling by motor cycle, were able to estimate with much more accuracy the costs involved in their work trip. Where public transport is used the cost of travel is easy to assess since the total cost is often the cost of a concession

ticket. Although costs may be compounded where two or more services are engaged, there were no cases found among those interviewed where this was done. Table XXII shows the cost of travel for those commuters using public transport.

TABLE XXI

ESTIMATED WEEKLY COST OF TRAVEL PER PRIVATE MOTOR VEHICLE TO PALMERSTON NORTH FROM SELECTED URBAN CENTRES

| Centre | Under 1000 c.c. | 1000 c.c. 2000 c.c. | Over 2000 c.c. | Number of Commuters Interviewed |
|---|---|---|---|---|
| | $ | $ | $ | |
| Dannevirke | 15.40 | 18.55 | 20.65 | 1 |
| Levin | 13.20 | 15.90 | 17.70 | 1 |
| Marton | 11.00 | 13.25 | 14.75 | 2 |
| Foxton | 10.56 | 12.75 | 14.16 | 9 |
| Bulls ) | | | | 1 |
| Shannon) | 8.80 | 10.60 | 11.80 | 1 |
| Woodville | 6.16 | 7.42 | 8.26 | 3 |
| Tokomaru) | | | | 1 |
| Rongotea) | 5.28 | 6.36 | 7.08 | 3 |
| Feilding) | | | | 33 |
| Ashhurst | 3.52 | 4.24 | 4.72 | 26 |
| Linton | 3.08 | 3.71 | 4.13 | 1 |
| Bunnythorpe | 2.20 | 2.65 | 2.95 | 5 |
| Longburn | 1.76 | 2.12 | 2.36 | 1 |
| | | | | 88 |

Sources: Survey Data, Ministry of Transport figures.

TABLE XXII

WEEKLY TRAVEL COST BY PUBLIC TRANSPORT FROM SELECTED URBAN CENTRES TO PALMERSTON NORTH (1969)

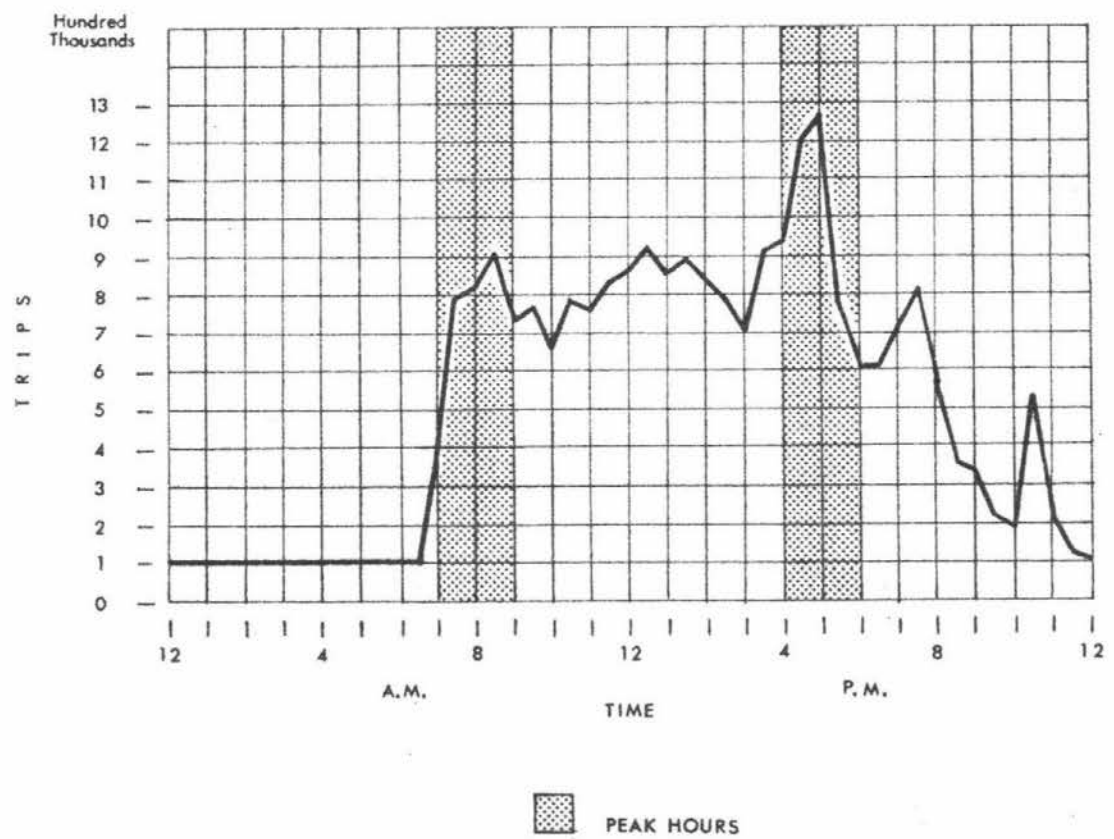
| Place | Cost of Workers' Concession Ticket | Number of Commuters Interviewed |
|---|---|---|
| | $ | |
| Levin | 4.50 | 4 |
| Pahiatua | 3.60 | 2 |
| Foxton & Foxton Beach | 3.50 | 16 |
| Shannon | 3.40 | 4 |
| Tokomaru | 2.60 | 1 |
| Woodville | 2.40 | 5 |
| Feilding | 2.15 | 51 |
| Bulls | 2.15 | 4 |
| Ashhurst | 2.10 | 5 |
| Rongotea | 2.05 | 3 |
| Bunnythorpe | 1.40 | 3 |
| Longburn | 1.20 | 2 |
| | | 100 |

ROAD USE

Foley has shown that work trips are the most important type of trip undertaken in an urban settlement, some two out of every five being for the purpose of travelling between home and work.[4] In Palmerston North this trend is observable in the peak traffic flows which occur at hours of the day when work is beginning and ending. (See Figure 6). The morning peak occurs at about 8.30 a.m., when in the period 1959-63 an average of some 2,520 vehicles were moving. In the afternoon the maximum peak is reached at 5.00 p.m., when the number of vehicles reached a daily

FIGURE 6

## AVERAGE ANNUAL TRAFFIC MOVEMENT
## PALMERSTON NORTH CITY
## 1959 - 63




SOURCE: P. N.C.C. Traffic Engineers Records

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total of 3,500.

The majority of the movements which take place in the city will have both origins and destinations within the city but a proportion, at least, will be connected with the termination of the journey to work of those who commute to the city.

In the origin area the commencement of the commuter's journey has little effect on traffic congestion since the beginning of the journey does not necessarily coincide with local peak traffic flows. In the destination area, however, the termination of the journey takes place at a time when local residents are travelling to work and the commuter's vehicle joins the peak traffic flows in the destination area. In Palmerston North no real obstruction to traffic flow is experienced since traffic volumes even at peak hours have not reached a level which is beyond the capacity of existing roads. Any momentary delays which might be experienced are likely to be in the afternoon peak when the homeward work trip is occuring and when local residents' vehicles and commuter's conveyances are joined by the vehicles of shoppers returning home.

Where public forms of transport are used the burden of road traffic is eased since one motor vehicle provides conveyance for a group of passengers who would otherwise be obliged to use private motor vehicles. Such a case would increase road traffic at peak times to some extent.

TIME OF TRAVEL

Figure 7 and Table XXIII show the time when commuters leave home for work, and the time spent in travel. For the most part there is little inconvenience or hardship in the time at which most commuters must leave for work in the Palmerston North Urban Area, since the earliest time was found to be not before 5.00 a.m. The majority of commuters leave home between 7.00 and 8.00 a.m.

TABLE XXIII

DURATION OF WORK JOURNEY IN MINUTES

| | 10--14 | 15--19 | 20--24 | 25--29 | 30--34 | 35--39 | 40--49 | 50--59 | 60+ | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Number | 61 | 79 | 104 | 17 | 97 | 36 | 21 | 2 | 28 | 445 |
| Per Cent | 13.7 | 17.7 | 23.4 | 3.8 | 21.8 | 8.1 | 4.7 | .4 | 6.3 | 99.9 |

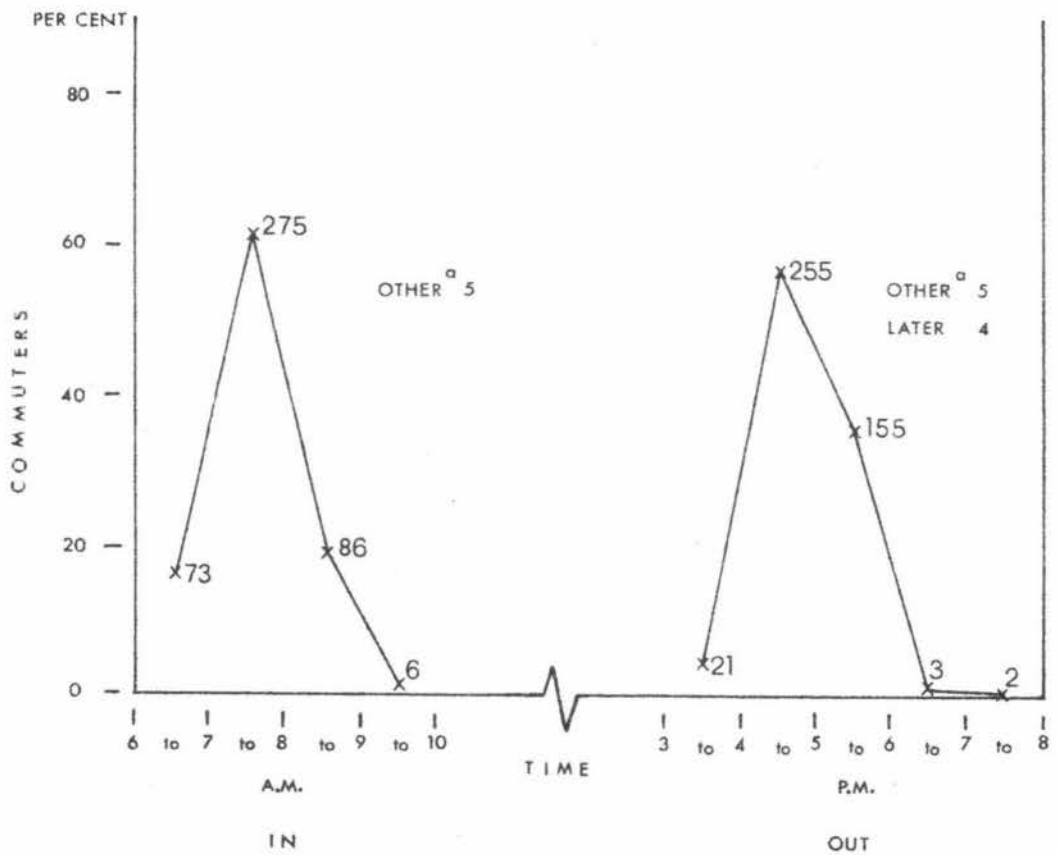
Almost all commuters have begun their homeward journey by 6.00 p.m., the majority, in fact, having left their place of work by 5.00 p.m. Little inconvenience is therefore encountered by commuters to the Palmerston North Urban Area in the journey between home and work in either direction.

Watson, writing in 1952 pointed out that at that time, "no general standard appears to have been evolved as to what should be the desirable limits of the duration of travelling time to work". [5] He arbitrarily selects thirty minutes as a desirable limit and uses this in his work. Table XXIII reveals that some

FIGURE 7

## TIME OF COMMENCEMENT OF WORK TRIP

## 445 COMMUTERS




[a]OTHER includes part-time and night-shift workers

(SEE ALSO APPENDIX D)

SOURCE: Survey Data

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58.6 per cent of commuters spend less than thirty minutes in travel to work in the Palmerston North Urban Area while the median time is 26.8 minutes. The range extends from ten minutes to over one hour. Thus, it may be assumed, the hardships which commuters face in the journey to work in the larger cities of the world, as Liepmann has shown, are not presented to commuters in the Manawatu. [6]

## THE EFFECT OF DISTANCE ON TRANSPORT TYPES

It has been noted in Chapter 2 what effect distance has on the numbers of commuters undertaking work in the Palmerston North Urban Area, but distance has an effect, too, on the type of transport used by the commuter in order to travel to work. It would seem that as distance from the city centre increases the dependence on public transport forms tends to increase and the importance of private transport diminishes. This is illustrated in Table XXIV.

In the group 10.01 to 15.00 miles are the towns of Woodville and Pahiatua and the increase in the use of private transport above the percentage which might be expected is probably due to the influence of the Manawatu Gorge. The journey through the Gorge by bus is much slower than by motor car and commuters are thus probably induced to use private transport in order to save time in the journey to work.

It is at a distance of over 20 miles that public services tend to terminate. No direct services by bus are provided from

Marton to Dannevirke, both within this group, at times which are convenient to commuters, so that intending travellers from these places are obliged to use private transport if they decide to work in the Palmerston North Urban Area and travel daily. (See Figure 5).

TABLE XXIV

EFFECT OF DISTANCE ON TRANSPORT TYPE, 280 URBAN RESIDENTS

| Distance in Road Miles | Private Transport (All forms) % | Public Transport (Bus) % |
|---|---|---|
| 0 - 5 | 66.6 | 33.3 |
| 5.01 - 10.00 | 64.5 | 35.4 |
| 10.01 - 15.00 | 67.6 | 32.3 |
| 15.01 - 20.00 | 61.7 | 38.3 |
| Over 20 Miles | 61.5 | 38.5 |

FOOTNOTES:

1. Austin, T.W. 1964, Palmerston North Transportation Plan: Methods and Results.

2. Reluctance to answer questions relating to the number of passengers and the amount of any contributions made was encountered quite frequently in the interviews, due, it is thought, to there being legislation requiring motor vehicle registration of a particular, and more costly, type, where motor vehicles are used for the carriage of fare-paying passengers. Such arrangements would constitute the paying of a fare. As a consequence no accurate report can be made on the effect of distance on numbers per vehicle.

3. Schnore, 1954, 431. The distance between rural commuters' residences is likely to be greater as distance from the city increases, the area of land increasing by the square of the radial distance.

4. Foley, 1954, 325. See also, Meyer, Kain & Wohl, Chapter 5 - The ratio of work trips to other types of trip could conceivably have changed due to the increase in motor vehicle ownership.

5. Watson, 1952, 284.

6. Liepmann, 1944, 48 - 56.

# CHAPTER 5.

## THE URBAN HIERARCHY AND THE COMMUTER

Settlement patterns in the Manawatu today are largely a product of the evolution of the area from bush to farmland. A complex of factors in the past has influenced settlement patterns and has led to the population changes which have marked the demography of New Zealand generally, so that here, as elsewhere, there has been a drift of population from rural to urban areas. This drift to the cities has been reflected in the decline of the smaller urban centres and the growth of the cities.

In the Manawatu the drift of population to Palmerston North and to the larger cities of New Zealand has led to the decline of the smaller settlements. While in some villages populations and economic functions have diminished the social functions which each performs have remained relatively unchanged although television may have had some influence upon the size and frequency of local social gatherings. Since population size and function are related, the larger the population the greater the number of functions and consequently, the larger the catchment area for those functions. The size of settlements and their associated hinterlands forms the basis of Christaller's central place studies and has been examined in detail by that author and others. [1]

### POPULATION AND FUNCTION HIERARCHIES

In Table II, Appendix D, an indication is given of the

present population hierarchy of the Manawatu. It may be seen from that table that the administrative status of each settlement is not necessarily an indication of its place in the population hierarchy. While population may give an appreciation of the size of a settlement its importance is closely linked with the number and type of functions it performs. [2] An examination of Table XXV will give an indication of the functional ranking of the various centres in the Manawatu.

TABLE XXV

POPULATION AND FUNCTION HIERARCHIES

| Place | Population 1966 | Functions |
|---|---|---|
| Palmerston North | 46,832 | - * |
| Levin | 11,402 | 701 |
| Feilding | 9,031 | 526 |
| Dannevirke | 5,728 | 468 |
| Marton | 4,731 | 344 |
| Foxton | 2,819 | 151 |
| Pahiatua | 2,597 | 279 |
| Bulls | 1,803 | 104 |
| Shannon | 1,544 | 102 |
| Woodville | 1,529 | 129 |
| Ashhurst | 922 | 66 |
| Foxton Beach | 695 | 40 |
| Longburn | 626 | 15 |
| Bunnythorpe | 537 | 25 |
| Tokomaru | 402 | 14 |
| Rongotea | 360 | 46 |
| Sanson | 356 | 28 |
| Linton | 263 | 6 |

Sources: Statistics Department, Survey Data.

* Functions were not calculated for Palmerston North, which, as the only city in the Manawatu, is assumed to have a range of functions commensurate with its position as the regional centre.

NOTE: For a list of functions upon which this table is based see Appendix C.

In order to delineate a Manawatu settlement hierarchy an examination of Table XXV was made and groups arbitrarily selected on the basis of population size and the number of functions. Five reasonably discrete groups as shown in Table XXVI emerged based on these two variables.

TABLE XXVI

HIERARCHICAL GROUPS

| Group * | Population Size | Number of Functions | Centres falling into Group |
|---|---|---|---|
| Regional Centre | 15,000 + | 1,000 + | Palmerston North |
| Sub-Regional Centres | 2,000 to 15,000 | 300 to 1,000 | Levin, Feilding, Dannevirke, Marton. |
| District Centres | 1,000 to 2,000 | 100 to 300 | Foxton, Shannon, Pahiatua, Bulls, Woodville. |
| Sub-District Centres | 650 to 1,000 | 30 to 100 | Ashhurst, Foxton Beach, Rongotea ** |
| Local Centres | 0 to 650 | 0 to 30 | Longburn, Tokomaru, Bunnythorpe, Linton, Sanson. |

* Group names were assigned on the basis of the types of functions predominating in the settlements of the group.

** Rongotea, although having a smaller population than that required for inclusion here was assigned to this group on the basis of the number and types of functions it performs which imply a larger than local hinterland.

## HIERARCHICAL GROUPINGS

### The Regional Centre

Palmerston North has been accorded the status of a Regional

Centre by Anderson. [3] As a regional centre all other centres within the hinterland of the city will depend upon it for those goods and services which are offered nowhere else in the district and which emphasise the city's regional importance. Near the city its attraction will be strongest but it should also be strong enough that those places on the periphery of the contributory area will still be drawn to the centre. If commuting may be used as an indication of the regional importance of Palmerston North, the city's sphere of influence extends as far south as Levin, and to Dannevirke and Wanganui in the north. [4] While information on commuting out of Palmerston North and between other places in the Manawatu is not available, it may be assumed with some degree of confidence that the Palmerston North Urban Area is the major attraction for commuting workers in the Manawatu. [5]

The Sub-Regional Centres

Below Palmerston North in the urban hierarchy are the sub-regional centres of Levin, Feilding, Marton and Dannevirke. The hinterlands of these centres combined will be smaller than the area of the regional centre's hinterland since the regional centre will perform sub-regional functions for those settlements adjacent to it. Within the hinterlands of the sub-regional centres, however, the population will depend on it for those functions which are associated with it and to the regional centre for those which are exclusive to the city. With respect to

commuting, the sub-regional centres contribute the greatest number of commuters to the Palmerston North Urban Area but this is to be expected since they are the centres of greatest population concentration after the city, and also because the hierarchy has been delimited on the basis of population and function. In terms of the proportion of the active workforce which commutes to the Palmerston North Urban Area, however, the sub-regional centres contribute the lowest percentage. This is a reflection of the number and range of functions performed by these settlements. Reference to Table XXVII will show the relationships between number and percentage.

District Centres

The term "District Centre" has been coined to include those places which offer goods and services which are district orientated rather than sub-regional, and those functions not performed by the district centres must be sought in the settlements located in the higher groups of the hierarchy. The term district centre here includes Foxton, Shannon, Bulls, Woodville and Pahiatua.

District centre hinterlands will be smaller than those of the sub-regional centres and occupational opportunities offered in the settlements in this group will be less than are offered in the sub-regional centres. Consequently a higher proportion of the working population could be expected to commute to the regional centre than does so from the sub-regional centres. Since populations are smaller, however, a lesser number could be

expected to commute. Reference to Table XXVII demonstrates the position.

TABLE XXVII

CONTRIBUTION OF COMMUTERS TO THE PALMERSTON NORTH URBAN AREA BY HIERARCHICAL GROUPINGS

| Group | Average Number of Commuters per Settlement | Average percentage of work force commuting, per settlement |
|---|---|---|
| Sub-Regional Centres | 83 | 3.3 |
| District Centres | 37 | 5.5 |
| Sub-District Centres | 58 | 26.9 |
| Local Centres | 26 | 18.2 |

Sub-District Centres

Standing apart from the District Centres and larger in population and function than the Local Centres are the Sub-District Centres. These are Ashhurst, Rongotea and Foxton Beach. In some respects all three settlements in this group could be called special settlements since in each case there is one function which seems to dominate the usual range of functions. Ashhurst and Rongotea, for example, have some status as dormitories for Palmerston North workers, each contributing a large

proportion of the actively engaged population as commuters to the Palmerston North Urban Area, (Ashhurst, 43.15 per cent and Rongotea, 32.79 per cent). Foxton Beach has a function as a resort and retirement centre as the following Table shows.

TABLE XXVIII

PERCENTAGE OF RESIDENT POPULATION OVER 60 YEARS OF AGE. SELECTED COUNTY TOWNS, MANAWATU, (1966).

| Place | Bulls | Ashhurst | Sanson | Rongotea | Foxton Beach |
|---|---|---|---|---|---|
| Per Cent | 7.0 | 10.5 | 13.5 | 10.8 | 45.5 |

Source: Statistics Department.

Local Centres

The smallest centres in the Manawatu urban hierarchy have been given the term "Local Centres". These are often little more than convenience centres for local residents. The local centres of the Manawatu are Longburn, Bunnythorpe, Tokomaru, Sanson and Linton. In some cases, such as Sanson and Linton, one of the primary functions, it would seem, is to house workers whose occupations are located near the settlement. Sanson is associated with the Ohakea Air Force Station while Linton is associated with Linton Military Camp. Other centres are sites of industry, some examples of which are quite large. Thus Longburn and Bunnythorpe house workers in local industry while Tokomaru, as

well as having some industry is also a breakpoint for goods carried on the Main Trunk railway.

Hinterlands for these centres are essentially small and the few customers who are attracted depend on the local centres for the goods and services which are usually the day to day necessities. Food and drink, motor spirit and oil are the commodities which are likely to attract customers from beyond the settlement while such services as are provided by the Post Office are sought by nearby rural dwellers as well as local residents.

While some workers will be engaged in the various local concerns, others, finding no work available, will be obliged to commute. Both in population and function these are small centres and the expected number of commuters is accordingly small. The percentage of the work force which commutes, while smaller than that of the sub-district centres is nonetheless a reflection of the size and function of the settlement.

DEPENDENCE WITHIN THE HIERARCHY

Whilst it may be expected that each settlement within the hierarchy fulfils its own function, it is not so clear that any dependence within the hierarchy follows an expected pattern from the lowest order of settlement to the next highest and so on. As one moves up the hierarcy each new group fulfils the functions which make it distinct, and also the functions of the settlements found in the lower orders. Thus the regional centre

performs all the functions of the settlements in all five groups.

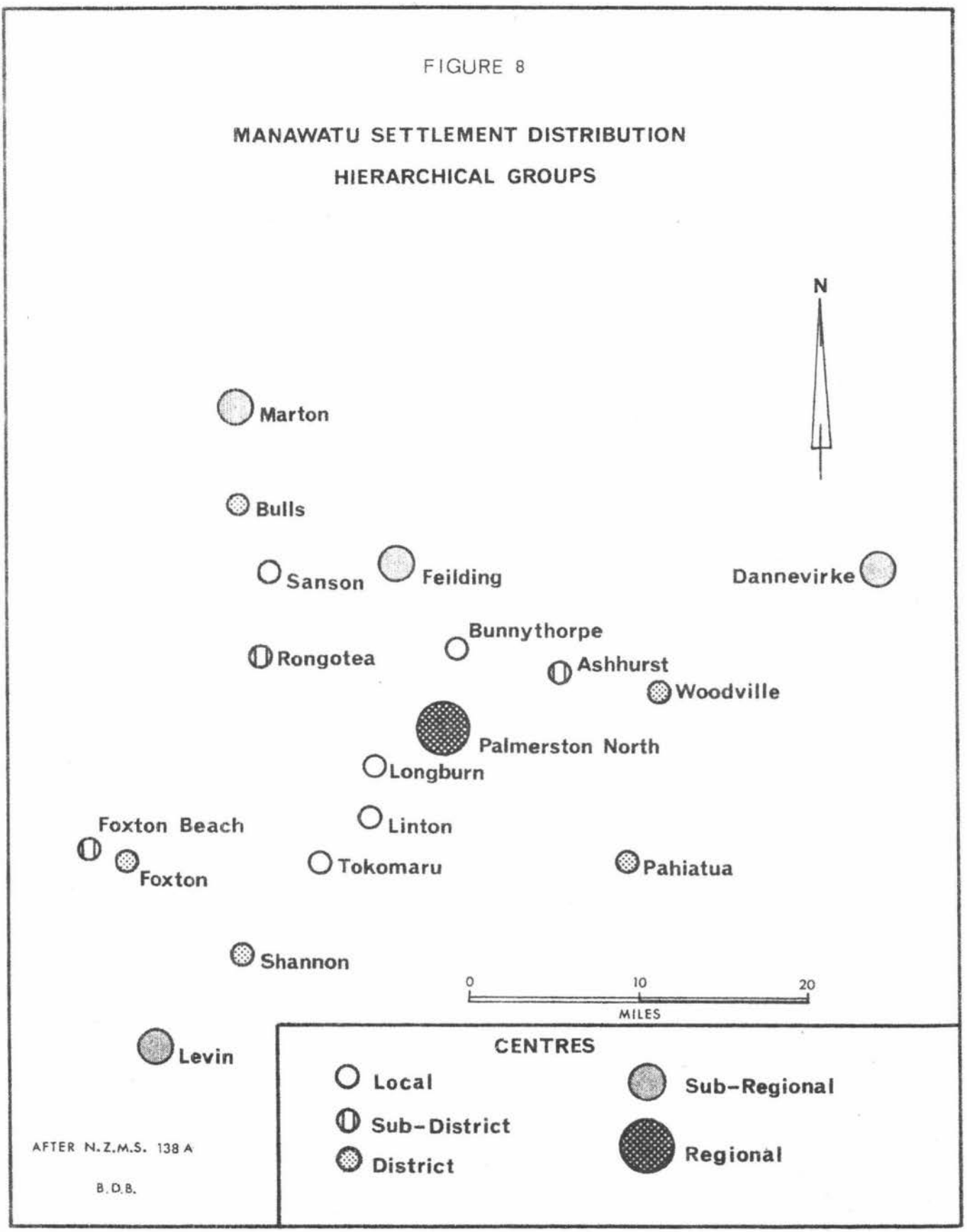
Commuting, as has been noted, does not follow an expected pattern and the numbers of commuters, and the percentage of the active work force from the various groupings fluctuates according to other factors. Distance is probably the factor which complicates the pattern which might be expected to emerge. Reference to Figure 8 will show the distribution of groups of settlements in relation to Palmerston North City, and it may be appreciated that for a settlement like, for example, Bunnythorpe, those functions which are performed by the sub-district, district, and sub-regional centres will be performed for Bunnythorpe by the regional centre. Since its proximity to the city is likely to reduce the number of functions which Bunnythorpe performs, the proportion of commuters from that place is accordingly higher than might be expected. That Bunnythorpe has a large industry probably operates against a larger number of commuters from that place.

## CORRELATION OF VARIABLES

In order to examine more closely the distribution of settlement about Palmerston North City in relation to commuting and the urban hierarchy, four variables were selected and correlated giving a total of six combinations. The four variables were, 1) Population size, 2) Road distance from Palmerston North, 3) Number of commuters to the Palmerston North Urban Area, and, 4) Number of functions performed by each settlement.

FIGURE 8

## MANAWATU SETTLEMENT DISTRIBUTION
## HIERARCHICAL GROUPS



In only one case was there discovered a good correlation. This was between population size and the number of functions.[6] This could be anticipated to some degree since the number of functions performed in any settlement is a reflection of the catchment area for the participants in each function and in most cases the preponderance of the population related to each function was domiciled in the settlement concerned.

The correlation of road distance from Palmerston North and the number of functions was found to be reasonably strong and reference to Figure 8 will show that the centres with the greatest number of functions tend to be located on the periphery of the study area. This trend is observable, too, in the correlation between population size and distance.

No good correlations could be discovered between the other variables examined.

RELATIONS OF SERVICES TO COMMUTING PATTERNS

It was pointed out earlier that the bulk of commuters travel to the Palmerston North Urban Area because no work is available closer to their homes. This is a reflection of the economic functions which the urban settlements perform and the increase in farming technology in the rural areas. Without conducting a comprehensive survey to determine the size of economic enterprises and the numbers employed in each place there is no accurate method of relating commuting patterns to the

economic functions of urban settlements. The correlation coefficient calculated between the number of commuters and the economic functions as used here is 0.2974 which is of little significance, and probably reflects the crudity of the data used.

RELATIONSHIPS BETWEEN CITY, VILLAGE AND RURAL AREAS.

Johnson has indicated that the journey to work under transportation conditions operating in this decade has led, in various parts of the world, to a breakdown in the distinction between urban and rural conditions with respect to land use and social organisation. [7] He speaks of the emergence of a rural-urban fringe zone in which various rural and urban characteristics are mixed.

While in the Manawatu this condition may not be so developed as to make difficult the distinction between urban and rural land use, there is some evidence of the emergence of a change in social attitudes. While this is probably not solely due to the journey to work from places beyond the city, commuting will have had some influence on the change in attitudes. The foundation, in the latter part of the decade, of a "Manawatu Regional Development Council" is an indication of the growing awareness, albeit in embryo, of the necessity for programmes of development which integrate both town and country, and the election of city dwellers to some ad hoc local authorities by voters in rural ridings seems to imply the beginnings of a breakdown of rural/urban disharmonies.

The mass means of communication are as freely available to rural residents as to urban dwellers so that the information disseminated is as readily available to all people irrespective of their place of residence. In the Manawatu radio reception is adequate so that national and local programmes are easily accessible while the Mount Wharite television translator makes television viewing in the Manawatu a matter of little difficulty. The Manawatu, too, has a selection of daily national and provincial newspapers as well as local district newspapers. In most cases these papers are members of the New Zealand Press Association so that news is as freely available to local as to national papers. As a consequence the attitudes influenced by the mass media should tend to be similar among citizens whether they are town or country dwellers, and distances are such that few places in the Manawatu are beyond an hour's driving time of Palmerston North City.

Ullmann has shown that the provision of good roads, by changing marketing and buying practices, tends to make the larger centres grow at the expense of the smaller.[8] In this way bonds between town and country are re-emphasised and there is thus a possibility of a two-way interchange of attitudes between rural and urban dwellers.

This two-way interchange should be extended by commuters, who, working in a city environment with city dwellers, absorb the attitudes and ideas of the work fellows and in turn disseminate

these in their rural and urban home areas. The reverse is also the case and the city resident learns to appreciate the point of view of the commuter who is able to demonstrate the ideas and attitudes of his residential area.

## SHOPPING AND THE COMMUTER

An analysis of figures for shopping habits of commuters to the Palmerston North Urban Area reveals that there exists a degree of loyalty to the residential area in shopping for those items which are available close to home. While other variables are involved, such as convenience or whether the wife works, the figures reveal the attraction of the city. This is demonstrated in Table XXIX.

Apart from those goods which may be sought at places which are convenient to the journey to work, petrol, oil and motor vehicle servicing, there appears to be some dependence upon the city for the provision of furniture and appliances. Clothing appears to be sought mainly in the city, but the figures are influenced by the number of young people who seek styles and assortments which are not always available in the home settlement.

## THE "MULTILPIER" EFFECT OF WAGES

The economic effect of commuters working in Palmerston North is to distribute money earned into the various centres from which commuters travel. The injection of capital into the settlements allows the maintenance of present functions, such as goods and

services already available, and the possible establishment of new economic functions. Within the receiving settlement the effective value of these introductions of money is greater than the value of the original amount spent since each transaction which takes place in the settlement has an income multiplier effect. If no money were spent in Palmerston North by the commuter, the home area would benefit to the extent of the original nett wage increased by the multiplier effect which it generates, but the city would still have gained the value of the money paid in wages in the goods and services which were produced by the commuting worker and which generate value for the city as well. [9]

TABLE XXIX

SHOPPING PREFERENCES OF COMMUTERS

| Shop Type | | Near Work | Near Home | Other | TOTAL | Not Applicable | Total |
|---|---|---|---|---|---|---|---|
| Groceries | Number | 63 | 104 | 1 | 168 | 277 | 445 |
| | Per Cent | 37.5 | 61.9 | .6 | 100.0 | | |
| Meat | Number | 73 | 93 | 1 | 167 | 278 | 445 |
| | Per Cent | 43.7 | 55.7 | .6 | 100.0 | | |
| Furniture) Appliances) | Number | 103 | 60 | 4 | 167 | 278 | 445 |
| | Per Cent | 61.7 | 35.9 | 2.4 | 100.0 | | |
| Petrol) Oil ) | Number | 114 | 65 | 2 | 181 | 264 | 445 |
| | Per Cent | 63.0 | 35.9 | 1.1 | 100.0 | | |
| Motor ) Vehicle) Service) | Number | 127 | 43 | 3 | 173 | 272 | 445 |
| | Per Cent | 73.4 | 24.8 | 1.7 | 99.9 | | |
| Clothing | Number | 314 | 125 | 6 | 445 | - | 445 |
| | Per Cent | 70.6 | 28.1 | 1.3 | 100.0 | | |
| Hair-dresser | Number | 301 | 136 | 8 | 445 | - | 445 |
| | Per Cent | 67.6 | 30.6 | 1.8 | 100.0 | | |

## COMMUTING AS A FACTOR IN HIERARCHY DEVELOPMENT

In the absence of information on any effect which commuting may have had in the past no conclusions of any value may be drawn on the part played by commuting in the development of the Manawatu hierarchy. Presently however, changes in the hierarchy may be taking place due to commuting but the lack of specific information makes difficult the assessment of change. As workers continue to commute changes should be accelerated and it is possible that some of the settlements closer to the Urban Area could increase their functions as dormitories for workers in the Palmerston North Urban Area.

While at present the majority of commuters (61.8 per cent) are single persons, the remaining 38.2 per cent is not an inconsiderable number. The increase in the percentage of the workforce of Ashhurst who commute, (see Chapter 2), appears to indicate that no particular objection to commuting seems to exist among married commuters, since of those who commute from Ashhurst some 65.9 per cent are married. (See Table XXX).

If the trend which is observable in Ashhurst is taking place in the other settlements, commuting could conceivably be the means of preventing their threatened extinction and rescuing them from the decline which they have experienced.

TABLE XXX

MARITAL STATUS BY PLACE OF RESIDENCE,
445 COMMUTERS

| Place | Married Etc. * | Never Married | Total |
|---|---|---|---|
| Levin | 3 | 4 | 7 |
| Shannon | 1 | 4 | 5 |
| Foxton | 26 | 23 | 49 |
| Tokomaru | 4 | 2 | 6 |
| Linton | - | 3 | 3 |
| Longburn | - | 5 | 5 |
| Rongotea | 4 | 8 | 12 |
| Bulls | 1 | 5 | 6 |
| Bunnythorpe | 4 | 6 | 10 |
| Feilding | 36 | 75 | 111 |
| Ashhurst | 29 | 15 | 44 |
| Fahiatua | - | 2 | 2 |
| Woodville | 4 | 10 | 14 |
| Dannevirke | - | 1 | 1 |
| Foxton Beach | 1 | 1 | 2 |
| Marton | 2 | 1 | 3 |
| Rural Areas | 55 | 110 | 165 |
| | | Total | 445 |

* Includes Divorced and Separated.

FOOTNOTES

1. Baskin, C.W. 1955, A Critique and Translation of Christaller's "Die Zentralen Orte in Suddeutschland", Unpub Ph.D., Thesis, University of Virginia, Xerox copy held in University of Tasmania Library. Baskin's translation of Christaller's work has been published but without the critique.

2. Ullmann, 1959, A Theory of Location for Cities, in Mayer & Kohn (eds) Readings in Urban Geography, 205.

3. Anderson, 1961,114.

4. With respect to Wanganui those who commute from here do so because of peculiar circumstances already noted (Chapter 2), and a more meaningful limit to the attraction of commuters from this direction would be Marton Borough.

5. Some 200 workers leave the Urban Area daily for work at Linton Military Camp while others are known to leave for other destinations but no accurate assessment of numbers may be made although an examination of major sources of employment outside the city would suggest that the number leaving would be lower than the 1,194 who commute in.

6. Correlation coefficients between the four variables were calculated using the formula,

$$r = \frac{N\Sigma xy - (\Sigma x)(\Sigma y)}{\sqrt{\left[N\Sigma x^2 - (\Sigma x)^2\right]\left[N\Sigma y^2 - (\Sigma y)^2\right]}}$$

the calculations resulting in the following answers.

| | | |
|---|---|---|
| i) | Population / Distance | 0.6766 |
| ii) | Population / Commuters | 0.4185 |
| iii) | Population / Function | 0.9836 |
| iv) | Distance / Commuters | -0.3063 |
| v) | Distance / Function | 0.7369 |
| vi) | Commuters / Function | 0.3529 |

7. Johnson, 1967, 142.

8. Ullman, 1959, A Theory of Location for Cities, in Mayer and Kohn, (eds) Readings in Urban Geography, 207

9. Samuelson, 1964, 231-40.

# CHAPTER 6.

# CONCLUSION

The complexity of modern society as it is presently represented in the Manawatu is the product of an age, now past, in which communications were difficult. The isolation thus engendered fostered the establishment of close-knit, small and self-sufficient communities. Later, communications were improved at a time when technological advances in the meat freezing and dairying industries gave the settlements some importance as collecting and distributing centres for pastoral produce. The introduction of motor transport in the early decades of this century changed the settlement structure and caused a decline in some of the smaller settlements and the growth of the larger centres of the area. Increases in the sophistication and reliability of the motor vehicle and the decrease in the motor car's price, relative to incomes have led, in more recent times, to the emergence of commuting.

## SETTLEMENT PATTERNS AND COMMUTING

In this study of the villages of the Manawatu, Franklin has been able to define three relatively discrete periods in the history of their development. [1] In a measure, the factors which moulded the destinies of the villages during their development are the same factors which have been instrumental in the emergence of the larger centres of the area and in the rise of commuting.

In the first of Franklin's periods, (1870-1895) the establishment of urban settlements as a means of developing bush areas gave to the Manawatu a distribution of settlement which has largely persisted to the present. During the second period, (1895-1925) the settlement pattern was consolidated as settlements became important centres for the collection and distribution of goods and services. In the third period, (1925-1960), technological innovation and the introduction of motor transport broke down the isolation which had fostered earlier growth and led to a decline in some settlements and accelerated the growth of others. Since 1960, the end of Franklin's third period, another period has begun to emerge which could have a profound effect upon the status and function of the smaller centres in the Manawatu hierarchy. A period in which commuting has become established has become a major factor in the social geography of the Manawatu.

## THE EMERGENCE OF COMMUTING

During the early part of the third period the decline of the service function in the smaller settlements was reflected in turn by a decline in population size as workers migrated away from areas where occupational opportunities were diminishing. Since the larger centres had gained both functions and employment opportunities, often at the expense of the smaller settlements, these became the destinations of migrants from the villages. While the decline in occupational opportunity in the smaller

settlements was met, initially, by migration, the increase in the availability of the motor vehicle gave workers the opportunity to commute to work in another area without the necessity of moving residence, and commuting became an acceptable alternative to migration.

Transport has been one of the most powerful factors in the decline of the smaller settlements during the third period, and it could also be a potent factor in the re-vitalisation of the villages in this fourth period. Commuting today has reached a stage where 837 urban dwellers from the Manawatu's smaller centres travel daily to work in the Palmerston North Urban Area, and this number is thought to be increasing.

RURAL DEPOPULATION AND COMMUTING

The factors which led to a decline of the smaller settlements were reflected, too, in the decline of the rural population and rural depopulation has been a feature of the area since motor transport became readily available. At the present time some 357 or 29.9 per cent of the commuters to the Palmerston North Urban Area are from rural areas of the Manawatu. In their home environment there is little chance of work being available and the decision either to migrate or to commute is one which must be faced by rural dwellers, who, finding no work near home, must look elsewhere. There are those, however, who have chosen to live in the rural areas for various reasons and who have taken a definite decision to commute.

Commuting to the Palmerston North Urban Area masks, in some measure, the effects of rural depopulation in the Manawatu since a proportion of the rural population as defined in the census returns are not workers in the rural areas. The census makes no distinction between rural residents who are workers in the counties and workers in other areas, and the assumption could be made that those resident in the rural areas are rural workers. Commuting to the Urban Area, however, complicates the pattern which appears in the census returns and a proportion of rural residents is engaged in the Urban Area's workplaces. In varying proportions the counties adjacent to Palmerston North City supply workers to the Urban Area. As may be expected, the proportion is highest from the Kairanga County which surrounds the city, and tends to decline with distance from the centre as Table XXXI demonstrates.

The percentages given in the table refer to commuters to the Palmerston North Urban Area and although commuting between other centres is known to take place, no assessment of the amount of commuting from the rural areas to other centres within the Manawatu can be made since this was beyond the scope of this study. It can be seen from the table that the proportions tend to diminish with distance from the city and with commuting to other centres in the Manawatu and Oroua Counties, in both of which there are work places of some importance, percentages could approach that which travel from the Kairanga County

to the Urban Area.

TABLE XXXI

PERCENTAGE OF THE RURAL POPULATION * COMMUTING TO THE PALMERSTON NORTH URBAN AREA. (COUNTIES ADJACENT TO PALMERSTON NORTH CITY).

| County | Population | Number Commuting | Percentage of Population Commuting | Distance (Miles) |
|---|---|---|---|---|
| Kairanga | 4,934 | 202 | 4.09 | 0 - 16 |
| Manawatu | 5,173 | 97 | 1.87 | 5 - 24 |
| Oroua | 2,426 | 28 | 1.15 | 3 - 28 |

*Excludes all forms of nucleated settlement included in this study.

Sources: Statistics Department, Survey Data.

## THE EFFECT OF DISTANCE ON COMMUTING

Distance has an effect on the numbers of commuters travelling daily to the Palmerston North Urban Area. Generally, the greater the distance to be travelled, the lower the number of commuters and the smaller the percentage of the actively engaged workforce from the urban settlements who are commuters to the Urban Area. The exceptions to this general rule may be accounted for by the psychological forces which operate against migration. It was found during the interviews that some commuters were content to travel, sometimes quite long distances, rather than to migrate since the psychological attachment to their residential area was so strong that the security which they enjoyed

was of greater value that the savings in both time and money which could be made if they had migrated to an area closer to their work destination.

Distance has an effect, too, on the type of transport used by the commuter. The greater the distance travelled the greater the dependence upon public transport. It may be assumed that the cost of operating a private motor vehicle was assumed by commuters to be excessive where longer distances were to be covered. Public transport is less costly than private although the amount of time spent in travel to work is greater for public than for private transport.

COMMUTING AND THE HIERARCHY

The fourth period which has begun to emerge follows from Franklin's three periods of development. In this period, based on commuting and the emergence of some settlements as dormitories for Urban Area workers, some changes in population distribution could be expected. As commuting continues to develop, the distribution of settlement will conceivably be reinforced by the increase in population in each settlement, but changes in the hierarchical status of some settlements might be expected. Those settlements closer to the Palmerston North Urban Area are likely to gain population, and while the number of functions performed in each settlement need not be altered to any great extent, it is possible that their type will change. The range of retailing services could be extended to cope with the demands

of a larger population but no new employment opportunities need be established, except for those associated with the expansion of retail and service activities.

Since the costs of establishing a home are apparently less in the smaller centres than in Palmerston North City where land is more expensive the attraction of the smaller centres as residential areas for commuting workers, at present showing signs of growth, is likely to increase further. In Ashhurst, for example, in the eight year period between 1960 and 1968, the proportion of the actively engaged workforce commuting to the Palmerston North Urban Area rose from 33 to 43 per cent. Rongotea, like Ashhurst, contributes almost one-third of its active workforce as commuters to the Palmerston North Urban Area while the proportion from Bunnythorpe is over one-quarter. It is suspected that the proportions travelling from both of these areas are increasing in a similar manner to the increase which has taken place in Ashhurst, although the increase may not be at the same rate.

The proportion of the active workforce which commutes from these three towns to the Urban Area may be cited as evidence for the emergence of towns of dormitory status. While Ashhurst contributes an increasing proportion of its workforce as commuters the attraction of commuting as an alternative to migration could well change the status of all three settlements within the foreseeable future.

## THE PRESENT STATUS OF COMMUTING

There are, at present, some 1,194 commuters to the Palmerston North Urban Area. The interviews revealed that occupational opportunity, available in the Urban Area but not near the commuter's residence, was the chief reason that commuting was taking place. Little evidence could be found to indicate that commuting was a stop-gap measure designed to tide the workers over until migration took place and permanent residence was established nearer to work, but rather that commuting was engaged in as the result of a deliberate decision. While single commuters were found to be more likely to migrate, married commuters were generally of the opinion that commuting offered a reasonable alternative to migration. Even among single commuters, however, the inducements were sufficient to allow a strong preference for commuting rather than migration. Evidence was found that indicated that after marriage the single commuter was likely to establish a home in a smaller centre rather than to seek housing in the city. The ownership of a residence was, naturally, a strong inducement to remain in a smaller centre while those who rented properties found rents lower in the smaller centres than in the city.

The availability of transport, both public and private has played a major part in the emergence of commuting as an alternative to migration. Without a means of transport at a cost which is within the means of the commuter, and at a sufficient

measure of convenience, commuting could not easily be engaged in. The availability of transport has allowed, accordingly, a high degree of mobility in the working population of the Manawatu and although the majority of workers live within close proximity to their place of work, increasing numbers have been able to live at varying distances and travel daily.

One of the inducements to commute is the cost involved in migration. This cost can be divided into money costs, that is, the actual amount lost in changing residence plus the extra costs involved in living in the city, and the psychological costs, of which the loss of immediate contact with friends and relatives and the loss of security of a known environment, play a large part.

Commuting, however, imposes other costs both in time and money. The time spent in travelling to work is time lost from the commuter's leisure hours. In few cases did this exceed more than two hours per day, and the median time involved in travel amounted to 53.6 minutes per day. Public transport forms are more time consuming than private transport and the majority of commuters interviewed travelled by private means. In terms of money, commuting costs vary considerably between public and private transport, and ride-sharing was found to be one of the most effective ways of reducing transport costs per person. In the example quoted in Chapter Four, five commuters travelled together using a different car each day. The costs involved for different methods of travel for these commuters were calculated

to be; ride-sharing, assuming a vehicle of between 1,000 and 2,000 c.c.s., 85 cents per person per week, for public transport, $2.10 per person per week, and for private transport (1,000 to 2,000 c.c. vehicle) $4.24 per person per week.

## THE FUTURE OF COMMUTING

It would appear at this juncture that commuting is likely to continue in the future and it might be expected that some increase in the numbers of commuters might be achieved. In the city pressure on residential land, while by no means excessive, has resulted in increased asking prices for building sections. The smaller centres have not yet experienced any great pressure on residential land and for some considerable time it might be expected that prices there will remain lower than those in the city for sections of comparable size. Thus the smaller centres are likely to retain a good measure of attraction for those wishing to establish a home.

While at present the range of community services is limited in almost all of the smaller centres and much of the social capital already invested in them is under-utilised, the expansion of population consequent upon an increase in commuting would allow a better use of existing amenities and the possible extension of the range of services.

Commuting, as we have seen, depends upon the availability of transport. In the future the availability of the private motor

vehicle is expected to increase so that no difficulty need be experienced in the journey to work through lack of transport. An increase in population would also allow a greater flexibility in, and a possible extension of, the existing public transport facilities operating between the smaller centres and the Urban Area.

The range and number of occupations offered within the Urban Area are such that opportunities for commuters are available at present to the extent that 1,194 commuters are able to undertake occupations in the area. In the future an expansion of opportunity may be expected as the Urban Area attracts new industry and as the present industry expands. At the present time there is evidence of expansion in existing industry in both Palmerston North and at Longburn, while at Massey University and the associated research institutions there is also in progress a programme of expansion. In addition the effort of the Industrial Promotion Committee is expected to achieve success in attracting new ventures to the city. In the future, therefore, the range and number of occupations offered in the Urban Area is likely to be able to absorb both a larger local labour force and an increased number of commuters.

## THE EFFECT OF AN INCREASE IN COMMUTING

Any major increase in commuting in the Manawatu should be reflected in changes in the status of settlement within the hierarchy and in a redistribution of population. With respect

to Ashhurst, Rongotea and Bunnythorpe, an appreciable increase in the numbers of commuters from these settlements would change their major function from a service to a dormitory function. Any increase in population achieved by these and other smaller settlements, especially those designated "sub-district" and "local centres" in this study, is likely to be reflected in an increase in the number of commuters from these centres since little development of employment opportunities is envisaged in the centres.

An increase in population in the dormitory settlements would tend to redistribute the population in the hierarchy. While little evidence was found to indicate any appreciable migration to the smaller centres close to Palmerston North by present commuters it is assumed that the centres close to the city would gain population at a faster rate than those at greater distances. While the city would still dominate the area in population the growth of dormitories would tend to distribute the population into settlements whose populations tended to diminish with increasing distance from the city.

The emergence of dormitory status in the sub-district and local centres close to the city would tend to revitalise these settlements. The increase in capital resulting from commuting which was available in the centres could well be sufficient to extend the range of functions and amenities already in existence, and as a consequence their attraction as residential centres

could be enhanced.

Commuting in the Manawatu as an alternative to migration has emerged as a response to changes in transport and technology which have, at once, reduced employment opportunities locally, and provided a mobility which has allowed the workers to undertake a longer journey to work. Among the effects which commuting is likely to have are the change in status of the smaller centres and a redistribution of population in the hierarchy. Commuting holds the potential to slow, or to reverse, the decline experienced in some of the smaller communities and might be expected to be a powerful influence in the emergence of a new period of vitality and growth in the evolution of the smaller settlements. As such commuting appears to be an appropriate and valuable alternative to migration.

## FUTURE RESEARCH

This thesis has, of necessity, been an initial study of the journey to work in the Manawatu. An attempt has been made here to examine the basic factors underlying the emergence of commuting, to enumerate the conditions under which commuters travel and to suggest some effects which commuting is likely to produce in the future. A great deal more research needs to be done.

In order to explore more fully the motives commuters have for travel an intensive sociological study should be carried out together with a thorough economic investigation. The

economic study might encompass a cost/distance analysis of commuter travel and could utilise appropriate sampling techniques. Among the important economic issues needing investigation, the difference in housing costs between the villages and the city are important. This investigation might profitably include land values, building costs and the availability of loan capital for home construction in different centres in the Manawatu.

A sociological study might include the motivations which people have for commuting and might be studied within the "stayer/mover" framework suggested by Holmes (1968). Such a study could illuminate much about the sence of environment or community which is apparently a strong motivation for the retention of a residence in a small centre in the face of economic pressure to move.

These economic and sociological issues, although alluded to, and in some cases discussed briefly here, are subjects requiring an intensive study not possible in this thesis. They should provide a profitable field of study and offer much to the knowledge of the local area.

FOOTNOTE:

1. Franklin, 1960, 158.

# APPENDICES

# APPENDIX A

## ANALYSIS OF INTERVIEWS WITH COMMUTERS

| | Number | Per Cent |
|---|---|---|
| **Contacts Made** | | |
| Interviews satisfactorily completed | 445 | 37.3 |
| Unsatisfactory Interviews | 53 | 4.4 |
| Refusals to answer | 29 | 2.4 |
| Left occupation for which interview sought | 17 | 1.4 |
| | 544 | 45.5 |
| **Uncontacted** | | |
| No address given by employer | 468 | 39.2 |
| No contact after four calls | 67 | 5.6 |
| Incomplete or incorrect address | 80 | 6.7 |
| Postal address only - Questionaire not returned | 35 | 2.9 |
| | 650 | 54.4 |
| Total Possible | 1,194 | 99.9 |

# QUESTIONAIRE

## PERSONAL

Age. 15-19 ..... 20-24 ..... 25-29 ..... 30-34 ..... 35-39 .....

40-44 ..... 45-49 ..... 50-54 ..... 55-59 ..... 60+ .....

Sex

Male .....

Female .....

Race ..... Birth Place .....

Marital Status. Married ..... Single ..... Separated ..... Divorced ..... Widowed .....

Does Your Wife/Husband Work? Yes..... No.....

Place ..... Type .....

Relation to Head of Household .....

Father's Work, Place ..... Type .....

Mother's Work, Place ..... Type .....

## Educational

Age When Leaving School ..... Class When Leaving School .....

Years at Secondary School .....

School Cert ..... Univ Entrance ..... Univ Schol .....

Degree or part (specify) .....

.....

Do you attend Night School, Yes ..... No .....

For What Purpose .....

Do you have a trade qualification? (specify) .....

Are you apprenticed? Yes ..... No .....

## Children

| Sex | Pre-Sch | Primary | Sec Under 15 | Sec Over 15 | Teachers' Coll | University |
|---|---|---|---|---|---|---|
| M | ..... | ..... | ..... | ..... | ..... | ..... |
| F | ..... | ..... | ..... | ..... | ..... | ..... |

Others in Household .....

Work, Place ..... Type .....

.....

RESIDENTIAL

Address (Not Box Number)

Number & Street .....

Town .....

County .....

How long have you lived in your present locality?

Under 1 year, 1-3 4-6 7-9 10 or more years.

..... ... ... ... .....

Why do you choose to live at your present address?

.....

.....

If single and living away from home:

How long have you lived away from home? ..... Years

Where do your parents live? Town .....

Ownership of Residence:

Is your house,

Owned Completely .....

Owned with a mortgage .....

Provided by employer,

a) Free .....

b) At a reduced rent .....

Do you rent a) State .....

b) Private .....

Do you Board? .....

How much do you pay in:

RENT/RATES/BOARD ..... WEEK/YEAR

EMPLOYMENT

Occupation .....

Company or Firm .....

Location .....

Department in Firm .....

Is your work,

| Regular | Seasonal | Occasional | Full-time | Part-time |
|---|---|---|---|---|
| ..... | ..... | ..... | ..... | ..... |

If seasonal, part-time or occasional, what is your normal work?

Type ..... Place .....

Reason for taking this employment,

| Housing | Better Money | Job Availability | Skills | Health | Ed/Self | Ed/Chn |
|---|---|---|---|---|---|---|
| ..... | ..... | ..... | ..... | ..... | ..... | ..... |

Other (Specify) .....

Income in Dollars, per year.

| | | | |
|---|---|---|---|
| Under 800 | ..... | 2000-2499 | ..... |
| 800-999 | ..... | 2500-2999 | ..... |
| 1000-1199 | ..... | 3000-3499 | ..... |
| 1200-1399 | ..... | 3500-3999 | ..... |
| 1400-1599 | ..... | 4000-4499 | ..... |
| 1600-1799 | ..... | 4500-4999 | ..... |
| 1800-1999 | ..... | Over 5000 | ..... |

How long have you been employed at your present work place? .....

Where was your last previous employment? .....

Why did you choose to change? .....

Did you commute to your last occupation? Yes ..... No .....

Are there the same opportunities in your occupational type in your home town? Yes..... No .....

Do you have any secondary jobs? Yes ..... No .....

Type ..... Town .....

TRAVEL

Do you own a car? Motor Cycle.

| Under 1000 cc | 1000 cc 2000 cc | Over 2000 cc | Under 60 cc | 60 cc 350 cc | Over 350 cc |
|---|---|---|---|---|---|
| ..... | ..... | ..... | ..... | ..... | ..... |

Other (Specify) .....

How do you travel to work?

| Own Car | M'Cycle | Cycle | Bus | Friend's Car | Rail |
|---|---|---|---|---|---|
| ..... | ..... | ..... | ... | ..... | .... |

Other (Specify) .....

What distance do you travel to work, one way .....

Do you carry passengers in your car (number) .....

What contribution does each pay per week .....

How many days per week do you travel .....

What is the total cost of your travel per week .....

Does your firm pay a travelling allowance .....

If so, how much .....

At what time do you begin your journey, to work .....
from work .....

How long does your journey (one way) last .....

Is there ample free public parking near work .....

Does your firm provide parking space .....

Are there any inadequacies in transport to/from work .....

.....

Route of travel (names of streets within city boundary) .....

.....

OTHER INFORMATION

Would you live nearer work if you could? Yes..... No.....

Would you work nearer home if you could? Yes..... No.....

Do you prefer to shop near work or near home, Work..... Home...

About how much would you spend per week in the following shops?

| TYPE | | NEAR WORK | NEAR HOME |
|---|---|---|---|
| Butcher | | ..... | ..... |
| Grocer | | ..... | ..... |
| Greengrocer | | ..... | ..... |
| Gifts | | ..... | ..... |
| Garage | Petrol & Oil | ..... | ..... |
| | Servicing | ..... | ..... |
| Other | | ..... | ..... |

| Where do you shop for, | Near Home | Near Work |
|---|---|---|
| Furnishings | ..... | ..... |
| Clothing | ..... | ..... |
| Household Appliances | ..... | ..... |

In which town is your hairdresser?

Near Work ..... Near Home .....

Do you make a special trip to Palmerston North to shop,

Yes ..... No .....

How often .....

What entertainment do you attend in Palmerston North?

.....

What sporting or recreational clubs do you belong to in Palmerston North .....

CODING FORM

No .....

O/Area ..... D/Area .....

| | | Col. Cd |
|---|---|---|
| 1. | Age 15-19 20-24 25-29 30-34 35-39 40-44 45-49 50-54<br>0 1 2 3 4 5 6 7<br>55-59 60+<br>8 9 | 1 |
| 2. | Sex O M1 F 2 | 2 |
| 3. | Race O Eur 1 Mao 2 Pac Is 3 As 4 Other 5 | 3 |
| 4. | Birth Place Pres Loc PN NI SI Aus Pac Is UK Eur Oth 4<br>0 1 2 3 4 5 6 7 8 9 | |
| 5. | Marital O M 1 S 2 Sep 3 D 4 W 5 | 5 |
| 6. | Spouse's Work O Yes 1 No 2 | 6 |
| 7. | Relation O Head 1 Wife 2 Child 3 N/N 4 Other 5 | 7 |
| 8. | Father's Wk O Home 1 Com 2 Ret 3 N/A 4 | 8 |
| 9. | Mother's Wk O Home 1 Com 2 Ret 3 N/A 4 | 9 |
| 10. | Age Sch O Up to 13 1 14 2 15 3 16 4 17 5 18 6 19 7 | 10 |
| 11. | Class O PS 1 F3 2 F4 3 F5 4 F6B 5 F6A 6 | 11 |
| 12. | Years O 1 2 3 4 5 6 | 12 |
| 13. | Ed St O SC 1 UE 2 US 3 Pt/D 4 1 Deg 5 2 Deg 6 2+ Deg 7 | 13 |
| 14. | Night Sch O No 1 Int 2 Tde 3 Tch 4 Oth 5 | 14 |
| 15. | Tde Qual O Yes 1 No 2 Not Using 3 | 15 |
| 16. | App O Yes 1 No 2 | 16 |
| 17. | Chn Pre/Pri/Sec 0 1 2 3 4 5 6 7 8 9+ | 17 |
| 18. | Chn Sec 15+ 0 1 2 3 4 5 6 7 8 9 | 18 |
| 19. | Chn TC/Un 0 1 2 3 4 5 6 7 8 9 | 19 |

20. Origin — Lvn 1, Shn 2, Fox 3, Tok 4, Ltn 5, Lgb 6, Ron 7, Bul 8, Bth 9; 0 — 20

Fdg 1, Ash 2, Pah 3, Woo 4, Dvk 5, R/A 6, F/B 7, Mar 8, 9; 0 — 21

21. Res/Time — 0 <1 1 1-3 2 4-6 3 7-9 4 10+ 5 — 22

22. Reason — Parents 1, Home 2, Hea 3, Hou/Cost 3, Atmos 4, Other 5; 0 — 23

23. Single/Time — Yrs 0 1 2 3 4 5 6 7 — 24

24. Parents Home Area

Auck 1, Waik 2, T'naki 3, HB 4, Wgtn 5, EC/Wai 6, SI 7; 0 — 25

25. Ownership — Comp 1, Mort 2, Emp/F 3, Emp/R 4, State 5, Pte 6, Board 7; 0 — 26

26. Cost/Rent — Yr 0, 100 1, 1-2 2, 2-3 3, 3-4 4, 4-5 5, 5-6 6, 6-7 7, 7-8 8, 8+ 9 — 27

27. Cost/Rates — Yr 0, <20 1, 20-30 2, 30-40 3, 40-50 4, 50-60 5, 60-70 6, 70-80 7, 80-90 8, 100+ 9 — 28

28. Cost/Board — Yr 0, 52 1, 104 2, 156 3, 208 4, 260 5, 312 6, 364 7, 416 8, 450+ 9 — 29

29. Occupation — Prof/Tech/Man 1, Cler 2, Sales 3, T&Com 4, Craft/Prod/Lab 5, Serv/Sp/Rec 6, NEC 7, Arm/F 8, Gov 9; 0 — 30

30. Degree of Skill — 0 High 1 Skil 2 Semi 3 Unsk 4 — 31

31. Destination — 0 COM/Z 1 RES/Z 2 I/Z 3 A/Z 4 — 32

32. Wk Reg (a) — 0 Reg 1 Sea 2 Occ 3 — 33

34. Wk Reg (b) 0 FT 1 PT 2 34

34. Reason Emp House Mon Aval Ski Hea Ed/S Ed/Ch Other 35
0 1 2 3 4 5 6 7 8

35. Salary <800 8-999 1000-1199 1200-1399 14-1499 36
0 1 2 3 4 5
16-1799 18-1999
6 7

2000-2499 25-2999 30-3499 35-3999 40-4499 37
0 1 2 3 4 5
45-4999 5000+
6 7

36. Length of Emp <6mo 6-1yr 1-4 5-9 10-14 15+ All Life
0 1 2 3 4 5 6 7 38

37. Loc of Last 0 Own Loc 1 PN/C 2 U/A 3 Man 4 WLD 5 39
ALD 6 SI 7 O'Sea 8 Sch 9

38. Reason Change 0 Int 1 Aval 2 Mon 3 Hea 4 Oth 5 N/A 6 40

39. Commute 0 Yes 1 No 2 41

40. Opportunity 0 Yes 1 No 2 42

41. Sec Emp 0 Yes 1 No 2 43

42. Travel Own C MC Cy Bus Fr/C Parent Rail Other 44
0 1 2 3 4 5 6 7 8

43. Veh Size Car <1000 1-2000 2000+ MC <60 60-350 45
0 1 2 3 4 5
350+
6

44. Distance <1 1-4 5-9 10-14 15-19 20-24 25-29 30+ 46
0 1 2 3 4 5 6 7 8

45. Passengers 0 1 2 3 4 5 6 7 47

46. Contrib. $ 0 1 2 3 4 5 6 7 48

47. Days 0 1 2 3 4 5 6 7 49

48. Cost $ <1 1-1.99 2-2.99 3-3.99 4-4.99 5-5.99 6.00+ 50
0 1 2 3 4 5 6 7

49. Travel Allow. 0 Yes 1 No 2 51

50. Time In 0 6-7 1 7-8 2 8-9 3 9-10 4 52

51. Time Out 0 3-4 1 4-5 2 5-6 3 6-7 4 7-8 5 Later 6 53

52. Duration (Min) 10-14 15-19 20-24 25-29 30-34 35-39 54
0 1 2 3 4 5 6
40-49 50-59 60+
7 8 9

53. Park Pub 0 Yes 1 No 2 N/A 3 55

54. Park Firm 0 Yes 1 No 2 N/A 3 56

55. Inadequate 0 Yes 1 No 2 57

56. Live Nearer 0 Yes 1 No 2 58

57. Work Nearer 0 Yes 1 No 2 59

58. Shopping Pref 0 Wk 1 Home 2 Other 3 N/A 4 60

59. Food 0 Wk 1 Home 2 Other 3 N/A 4 61

60. Meat 0 Wk 1 Home 2 Other 3 N/A 4 62

61. Furn/App 0 Wk 1 Home 2 Other 3 N/A 4 63

62. Pet/Oil 0 Wk 1 Home 2 Other 3 N/A 4 64

63. Service 0 Wk 1 Home 2 Other 3 N/A 4 65

64. Clothing 0 Wk 1 Home 2 Other 3 66

65. Hairdresser 0 Wk 1 Home 2 Other 3 67

66. Spec Trip 0 Yes 1 No 2 68

67. Entertain't 0 Reg 1 Occ 2 Never 3 69

68. Spt Club etc 0 Yes 1 No 2 70

NUMBER

77. 0 1 2 3 4 5 6 7 8 9 77
78. 0 1 2 3 4 5 6 7 8 9 78
79. 0 1 2 3 4 5 6 7 8 9 79
80. 0 1 2 3 4 5 6 7 8 9 80

Age (Years)

| 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 | 55-59 | 60+ |
|---|---|---|---|---|---|---|---|---|---|
| 141 | 130 | 45 | 26 | 19 | 26 | 15 | 20 | 13 | 10 |

Sex

Male: 254 Female: 191

Race

| European | Maori | Pacific Islanders | Asian |
|---|---|---|---|
| 419 | 16 | 1 | 9 |

Marital Status

| Married | Single | Separated | Widowed |
|---|---|---|---|
| 161 | 275 | 3 | 6 |

Spouse's Work

| Yes | No | Not Applicable |
|---|---|---|
| 63 | 98 | 284 |

Relation to Head of House

| Head | Wife | Child | Niece/Nephew | Other |
|---|---|---|---|---|
| 132 | 43 | 263 | 1 | 6 |

Parent's Work

| | Home | Commuter | Retired | Not Applicable |
|---|---|---|---|---|
| Father | 228 | 25 | 12 | 180 |
| Mother | 22 | 6 | 0 | 417 |

Age at Leaving School

| 13 & Under | 14 | 15 | 16 | 17 | 18 | 19 |
|---|---|---|---|---|---|---|
| 4 | 19 | 70 | 183 | 141 | 25 | 3 |

Class At Leaving School

| Primary | Form 3 | Form 4 | Form 5 | Form 6B | Form 6A |
|---|---|---|---|---|---|
| 23 | 38 | 90 | 172 | 98 | 24 |

Years At Secondary School

| 0 | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| 23 | 40 | 90 | 134 | 118 | 35 | 5 |

Educational Standard Reached

| Nil | School Cert. | University Entrance | Part Degree | One Degree | Two Degrees | Over Two Degrees |
|---|---|---|---|---|---|---|
| 238 | 115 | 76 | 10 | 2 | 2 | 2 |

Attendance at Night School

| No | Interest | Trade Exam | Teaching |
|---|---|---|---|
| 428 | 4 | 11 | 2 |

Trade Qualification

| Yes | No | Not Using |
|---|---|---|
| 71 | 362 | 12 |

Apprenticeships Held

| Yes | No |
|---|---|
| 37 | 408 |

Number of Children at Educational Institutions

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| Pre-School Primary or Secondary Under 15 | 348 | 25 | 45 | 19 | 6 | 1 | 1 |
| Secondary, over 15 | 412 | 30 | 2 | 1 | 0 | 0 | 0 |
| University or Teachers' College | 442 | 3 | 0 | 0 | 0 | 0 | 0 |

Origin Area

| Lvn | Shn | Fxn | Tok | Ltn | Ron | Lgb | Bul | Bth | Fdg | Ash | Pah | Woo | Dvk | F/B | Mar | Rur/A |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | 5 | 49 | 6 | 3 | 12 | 5 | 6 | 10 | 111 | 44 | 2 | 14 | 1 | 2 | 3 | 165 |

Length of Residence in Years

| Under 1 | 1-3 | 4-6 | 7-9 | 10+ |
|---|---|---|---|---|
| 16 | 33 | 58 | 33 | 305 |

Reason for Residence

| Parents' Home | Health | Housing or Cost | Atmosphere | Other |
|---|---|---|---|---|
| 264 | 3 | 71 | 27 | 80 |

Years Living Away from Home, Single Commuters

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | Not Applicable |
|---|---|---|---|---|---|---|---|
| 2 | 1 | 0 | 2 | 1 | 0 | 1 | 438 |

Parents' Home Area (Single commuters living away from home)

| Not Applicable | Auckland | Waikato | Wellington |
|---|---|---|---|
| 438 | 2 | 1 | 4 |

Tenure of Residence

| Owned Completely | Mortgaged | Provided by Employer Free | Provided by Employer at Reduced Rent | State Rent | Private Rent | Board |
|---|---|---|---|---|---|---|
| 83 | 58 | 1 | 1 | 7 | 22 | 273 |

Cost of Rent in Dollars per Year

| N/A | 100-199 | 200-299 | 300-399 | 400-499 | 500-599 | 600-699 |
|---|---|---|---|---|---|---|
| 417 | 8 | 5 | 9 | 4 | 0 | 2 |

Cost of Rates in Dollars Per Year

| N/A | Up to 20 | 20-29 | 30-39 | 40-49 | 50-59 | 60-69 | 70-79 | 80-89 | 90-100+ |
|---|---|---|---|---|---|---|---|---|---|
| 348 | 34 | 5 | 21 | 13 | 9 | 5 | 6 | 2 | 2 |

Cost of Board in Dollars Per Year

| Nil & N/A | Up to 52 | 52-103 | 104-155 | 156-207 | 208-311 | 312-363 | 364-415 | 416-449 | 450+ |
|---|---|---|---|---|---|---|---|---|---|
| 213 | 1 | 33 | 59 | 64 | 50 | 15 | 4 | 5 | 1 |

Occupational Grouping

| Prof/Tech/Manag | Cler | T & C | Craft/Prod/Lab | N.E.C. | Sales |
|---|---|---|---|---|---|
| 62 | 152 | 2 | 139 | 37 | 53 |

Degree of Skill

| Highly Skilled | Skilled | Semi-Skilled | Unskilled | Other |
|---|---|---|---|---|
| 11 | 61 | 63 | 273 | 37 |

Destination Area

| Commercial Zone | Industrial Zone | Residential Zone | Agricultural Zone |
|---|---|---|---|
| 322 | 63 | 43 | 17 |

Work Regularity

| Regular | Seasonal | Occasional | Full Time | Part Time |
|---|---|---|---|---|
| 440 | 3 | 2 | 438 | 7 |

Reason for Taking Employment

| Money | Availability | Skills | Health | Education of Self | Other |
|---|---|---|---|---|---|
| 11 | 294 | 35 | 4 | 70 | 31 |

Salary (In 100's of Dollars per Year)

| Up to 8 | 8-9 | 10-11 | 12-13 | 14-15 | 16-17 | 18-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | 32 | 43 | 32 | 56 | 67 | 54 | 77 | 42 | 14 | 7 | 5 |

| 45-49 | 50. |
|---|---|
| 2 | 3 |

Length of Employment

| Up to 6 mo | 6 mo - 1 yr | 1-4 | 5-9 | 10-14 | 15+ | All Life |
|---|---|---|---|---|---|---|
| 31 | 58 | 259 | 61 | 24 | 10 | 2 |

Location of Last Employment

| Near Home | P.N. City | Urb Area | Manawatu | Wgtn Area | Auck Area | Sth Isd | O'Seas |
|---|---|---|---|---|---|---|---|
| 64 | 70 | 5 | 12 | 23 | 14 | 3 | 9 |

| School |
|---|
| 245 |

Reason for Change of Occupational Location

| Interest | Availability | Money | Health | Other | Not Applicable |
|---|---|---|---|---|---|
| 44 | 9 | 61 | 8 | 78 | 245 |

Commute to Last Employment

| Yes | No | Not Applicable |
|---|---|---|
| 90 | 110 | 245 |

Same Opportunity Near Home

| Yes | No |
|---|---|
| 24 | 421 |

Secondary Employment held by Commuter

| Yes | No |
|---|---|
| 11 | 434 |

Travel Type

| Own Car | Motor Cycle | Cycle | Bus | Friend | Parent | Other |
|---|---|---|---|---|---|---|
| 166 | 12 | 2 | 142 | 91 | 6 | 26 |

Vehicle Size (Capacity in cubic Centimetres)

| Car: | Under 1,000 | 1,000-2,000 | 2,000+ | Motor Cycle | Under 60 | 60-350 | 350+ | N/A |
|---|---|---|---|---|---|---|---|---|
| | 62 | 81 | 23 | | 4 | 6 | 2 | 267 |

Distance (Miles)

| 1-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30+ |
|---|---|---|---|---|---|---|
| 19 | 131 | 170 | 38 | 71 | 6 | 10 |

Number of Passengers

| 0 & N/A | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 384 | 40 | 17 | 2 | 1 | 1 |

Contribution Made (Dollars)

| 0 & N/A | 1 | 2 |
|---|---|---|
| 427 | 16 | 2 |

Number of Days Travelled to Work

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| 1 | 0 | 1 | 2 | 424 | 15 | 2 |

Cost of Travel Per Week (Dollars)

| 0 | 1.00 | 1.00-1.99 | 2.00-2.99 | 3.00-3.99 | 4.00-4.99 | 5.00-5.99 | 6.00+ |
|---|---|---|---|---|---|---|---|
| 45 | 18 | 102 | 142 | 77 | 39 | 9 | 13 |

Travel Allowance

| Yes | No |
|---|---|
| 96 | 349 |

Time of Commencement of Inward Journey (a.m.)

| 6-7 | 7-8 | 8-9 | 9-10 | Other |
|---|---|---|---|---|
| 73 | 275 | 86 | 5 | 5 |

Time of Commencement of Homeward Journey (p.m.)

| 3-4 | 4-5 | 5-6 | 6-7 | 7-8 | Later | Other |
|---|---|---|---|---|---|---|
| 21 | 255 | 155 | 3 | 2 | 4 | 5 |

Duration of Journey (Minutes)

| 10-14 | 15-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-49 | 50-59 | 60+ |
|---|---|---|---|---|---|---|---|---|
| 61 | 79 | 104 | 17 | 97 | 36 | 21 | 2 | 28 |

Parking Near Work

| Public: | Yes | No | N/A | Private: | Yes | No | N/A |
|---|---|---|---|---|---|---|---|
| | 49 | 65 | 331 | | 83 | 100 | 262 |

Inadequacies in Travel

| Yes | No |
|---|---|
| 26 | 419 |

Live Nearer Work

| Yes | No |
|---|---|
| 68 | 377 |

Work Nearer Home

| Yes | No |
|---|---|
| 81 | 364 |

Shopping Preferences

| | Near Home | Near Work | Other Area | N/A |
|---|---|---|---|---|
| General Preference | 165 | 275 | 3 | 2 |
| Food | 104 | 63 | 1 | 277 |
| Meat | 93 | 73 | 1 | 278 |
| Furniture & Appliances | 60 | 103 | 4 | 278 |
| Petrol and Oil | 65 | 114 | 2 | 264 |
| Service (Motor) | 43 | 127 | 3 | 272 |
| Clothing | 125 | 314 | 6 | - |
| Hairdresser | 136 | 301 | 8 | - |

Special Trip for Shopping

| Yes | No & N/A |
|---|---|
| 51 | 394 |

Entertainment Trips to P.N.

| Regular | Occasional | Never |
|---|---|---|
| 131 | 212 | 102 |

Membership of Sport/Social/Cultural Clubs in P.N.

| Yes | No |
|---|---|
| 87 | 358 |

# APPENDIX B

## ASSIGNMENT OF OCCUPATIONAL TYPES

1. Professional, Technical and Managerial Occupations.
   Teachers, Managers, Supervisors, Qualified technical workers, Professional workers.

2. Clerical workers.
   Unqualified clerks, Nurse-Receptionists, Bank officers (other than Managers)

3. Sales Workers.
   Sales assistants in retail and wholesale firms, Waitresses.

4. Transport and Communications Workers.
   Drivers, Traffic Inspectors, Telephone and other Communications operators.

5. Craft, Production Workers and Labourers.
   Factory Hands, Unqualified Draughtsmen, Apprentices, Master Tradesmen and journeymen other than proprietors or managers.

6. Not Elsewhere Classified.
   Teachers' College Students, and other students receiving wages.

# ASSIGNMENT OF SKILLS

1. Highly Skilled.
   Teachers with University Degrees and Professional Qualifications. Graduates whose Degree is directly related to the work undertaken.

   Workers using professional competence gained through examination by a University or Professional Organisation.

2. Skilled.
   Master tradesmen and journeymen. Draughtsmen (Qualified).

3. Semi-Skilled.
   Apprentices and those engaged in occupations for which they are partially qualified but with no completed qualification. Photographers.

4. Unskilled.
   Clerks (unqualified), Waitresses, Shop Assistants (Sales), Factory hands and production workers without qualifications.

5. Other.
   Teachers' College Students and related students.

# APPENDIX C.

## THE DELINEATION OF THE URBAN HIERARCHY

In order to determine the number of functions which each urban settlement performed a list was drawn up from the 1969 issue of the Universal Business Directory. This list was then checked in the field to ensure its accuracy as far as possible and alterations were made as necessary.

Service, Economic and Social functions were listed and the total number of outlets for these functions was then assumed to be the number of functions for that place. It is apparent that anomalies abound in a classification of this kind since no account is taken of the size of the outlet or the numbers employed. A backyard industry run by one person, for example, is given the same weighting as an industry employing fifteen or twenty or 100 employees. The functions in various categories were found to be as follows.

| Place | Service | Economic | Social | Total |
|---|---|---|---|---|
| Ashhurst | 13 | 41 | 12 | 66 |
| Bulls | 23 | 70 | 11 | 104 |
| Bunnythorpe | 9 | 11 | 5 | 25 |
| Foxton | 38 | 84 | 29 | 151 |
| Foxton Beach | 13 | 18 | 9 | 40 |
| Linton | 1 | 4 | 1 | 6 |
| Rongotea | 11 | 30 | 5 | 46 |
| Sanson | 6 | 18 | 4 | 28 |
| Shannon | 21 | 65 | 16 | 102 |
| Tokomaru | 2 | 7 | 5 | 14 |
| Woodville | 37 | 70 | 22 | 129 |
| Longburn | 2 | 9 | 4 | 15 |
| Levin | 129 | 538 | 34 | 701 |
| Feilding | 131 | 353 | 43 | 526 |
| Pahiatua | 65 | 193 | 21 | 279 |
| Marton | 73 | 248 | 23 | 344 |
| Dannevirke | 95 | 341 | 32 | 468 |

Within the categories the individual functions were assigned to the groups according to the following schedule.

A. Service Functions

1. Professional Services. Accountants, Secretaries, Insurance Agents, Real Estate Agents, Barristers and Solicitors, Opticians, Music Teachers and related professions.
2. Medical Services. Plunket Nurses, District Nurses, Public Health Nurses, Maternity Hospitals, Convalescent Homes, Private and Public Hospitals.
3. Medical Practitioners. Doctors, Dentists, Veterinarians.
4. Legal Services. Justices of the Peace, Court Houses.
5. Local Authorities. County Town, Borough and County Borough Councils and Committees (where separate offices were established), and ancillary ad hoc services.
6. Newspapers. Local newspapers published at regular intervals.

7. Government Services. Police, and Post and Telegraph Offices (excluding the P.O.S.B.), Railways Department.
8. Other Services. Totalisator Agency Board Offices, Dispensing Chemists, Bus and Taxi Companies, Accommodation Units (excluding Licensed premises) Motor Camps, Civic Amenities (Swimming Baths etc) Boarding Kennels and catteries.

B. Economic Functions

1. Food and Drink Sales. Grocers, Dairies, Milk Bars, Greengrocers, Home Cookeries, Bread and Cake Sales, Butchers, Fish Shops, Wine Resellers.
2. Hotels. Licensed premises with and without accommodation.
3. Personal Service Sales. Hairdressers, Dry Cleaners, Funeral Directors, Travel Offices, Chimney Cleaners.
4. Other Retailing. Drapers and Clothiers, Home Appliance and Electrical Retailing, Hardware, Books and Stationery, Toys, Footwear, Furniture, Second-hand Dealers, Cycle Shops, Florists, Radio Dealers, Jewellers.
5. Building and Construction. Builders, Plumbers, Drainlayers, Electricians, Painters and Paperhangers.
6. Manufacturing. All forms of manufacturing except those classified elsewhere.
7. Banking Services. Trading and Savings Banks including the P.O.S.B.
8. Stock and Station Agents. Including Stock Buyers.
9. Agricultural Service Operators. Agricultural Contractors, Carriers, Gravel, Sand and Shingle Suppliers.
10. Vehicle Maintenance. Motor Garages, Service Stations, Motor Wreckers, Parts and Sales, Panelbeaters, Welders, Motor Mower Repairs.
11. Timber Merchants. Retail and Wholesale selling excluding timber milling plants and joinery factories.

C. Social Functions

1. Theatres. Live theatres, Civic centres, Picture theatres.
2. Halls. Halls used as places of entertainment, Church halls used predominantly as places of entertainment, Churches and Church Rooms and Halls used as places of worship.
3. Libraries. Public Libraries, Lending Libraries, Museums and Art Galleries.
4. Clubs and Associations. Social and service clubs the primary purpose of which is social rather than Associations connected with trade and commerce.

In assigning firms to groups an attempt was made to assign the firm according to the predominant activity carried out. For example, a timber firm may engage in milling, joinery manufacture, hardware sales and the selling of timber on both a retail and wholesale basis. Where the sales section was the predominant activity the firm was assigned to a sales category rather than to a manufacturing group.

# APPENDIX D.

## TABLES

### TABLE I

### URBAN MOVEMENT NEW ZEALAND

| Census | Urban | | Rural | |
|---|---|---|---|---|
| | Number | Per Cent | Number | Per Cent |
| 1926 | 888,585 | 63.4 | 512,416 | 36.6 |
| 1951 | 1,345,292 | 69.6 | 588,302 | 30.4 |
| 1956 | 1,535,951 | 70.8 | 633,663 | 29.2 |
| 1961 | 1,779,754 | 73.9 | 629,665 | 26.1 |
| 1966 | 2,064,574 | 77.3 | 607,534 | 22.7 |

Source: N.Z. Census of Population and Dwellings, 1966. Vol 1, 3.

TABLE II

URBAN POPULATION HIERARCHY OF THE MANAWATU, 1966 CENSUS

| | Place | County | Type | Population |
|---|---|---|---|---|
| | Palmerston North | Kairanga | City | 46,832 |
| | Levin | Horowhenua | Borough | 11,402 |
| | Feilding | Oroua | Borough | 9,031 |
| | Dannevirke | Dannevirke | Borough | 5,728 |
| | Marton | Rangitikei | Borough | 4,731 |
| | Foxton | Manawatu | Borough | 2,819 |
| | Pahiatua | Pahiatua | Borough | 2,597 |
| | Bulls | Rangitikei | County Town | 1,803 |
| | Shannon | Horowhenua | Borough ** | 1,544 |
| | Woodville | Woodville | Borough | 1,529 |
| | Ashhurst | Oroua | County Town | 922 |
| * | Linton Milit. Camp | Kairanga | -- | 766 |
| | Foxton Beach | Manawatu | County Town | 695 |
| | Longburn | Kairanga | Township | 626 |
| * | Massey University | Kairanga | -- | 623 |
| | Bunnythorpe | Oroua | Township | 537 |
| | Halcombe | Oroua | Township | 464 |
| | Tokomaru | Horowhenua | Township | 402 |
| | Rongotea | Manawatu | County Town | 360 |
| | Sanson | Manawatu | County Town | 356 |
| | Kimbolton | Kiwitea | Township | 279 |
| | Linton | Kairanga | Township | 263 |
| | Cheltenham | Oroua | Township | 252 |
| | Tangimoana Beach | Manawatu | County Town | 176 |
| | Himatangi Beach | Manawatu | County Town | 92 |

* Linton Military Camp, and Massey University, while not Towns in the accepted sense of the word, are nevertheless centres of nucleated settlement, and for this reason are included here within the urban population hierarchy.

** Shannon was listed in the 1966 Census as a Borough. It has since changed its status to that of County Town, and more recently to a County Borough under recent legislation.

Source: Department of Statistics.

TABLE III

POPULATION FLUCTUATION IN URBAN SETTLEMENTS, MANAWATU, 1966 CENSUS

| Place | 1945 | 1951 | 1956 | 1961 | 1966 |
|---|---|---|---|---|---|
| Palmerston North City | 25,277 | 30,518 | 35,632 | 41,014 | 46,832 |
| Levin | 3,259 | 4,736 | 6,488 | 8,964 | 11,402 |
| Feilding | 5,001 | 5,812 | 6,784 | 8,172 | 9,031 |
| Dannevirke | 4,334 | 4,664 | 5,294 | 5,508 | 5,728 |
| Marton | 2,915 | 3,475 | 4,001 | 4,319 | 4,731 |
| Foxton | 1,651 | 2,226 | 2,525 | 2,628 | 2,819 |
| Pahiatua | 1,749 | 2,097 | 2,322 | 2,578 | 2,597 |
| Bulls | 605 | 693 | 793 | 1,217 | 1,803 |
| Shannon | 922 | 1,042 | 1,189 | 1,398 | 1,544 |
| Woodville | 1,095 | 1,279 | 1,439 | 1,530 | 1,529 |
| Ashhurst | 560 | 646 | 826 | 641 | 922 |
| Linton Military Camp | - | 72 | 780 | 510 | 766 |
| Foxton Beach | - | 541 | 794 | 819 | 695 |
| Longburn | 696 | 694 | 685 | 612 | 626 |
| Massey University | - | 393 | 413 | 502 | 623 |
| Ohakea Air Force Stn | - | 390 | 824 | 738 | 570 |
| Bunnythorpe | 563 | 607 | 684 | 626 | 537 |
| Halcombe | 376 | 439 | 504 | 471 | 464 |
| Tokomaru | 396 | 406 | 380 | 427 | 402 |
| Rongotea | 411 | 482 | 581 | 369 | 360 |
| Sanson | 313 | 349 | 491 | 325 | 356 |
| Kimbolton | 201 | 247 | 241 | 293 | 279 |
| Linton | - | - | 363 | 253 | 263 |
| Cheltenham | - | - | 324 | 300 | 252 |
| Tangimoana Beach | - | - | - | 186 | 176 |
| Himatangi Beach | - | - | - | 81 | 92 |

Source: Department of Statistics.

TABLE IV

PERCENTAGE CHANGE IN POPULATION, MANAWATU URBAN SETTLEMENTS

1945 - 1966

| | 1945-51 | 1951-56 | 1956-61 | 1961-66 |
|---|---|---|---|---|
| Palmerston North | 20.7 | 16.8 | 15.1 | 14.2 |
| Levin | 45.3 | 37.0 | 38.2 | 27.2 |
| Feilding | 16.2 | 16.7 | 20.5 | 10.5 |
| Dannevirke | 7.6 | 13.5 | 2.6 | 4.0 |
| Marton | 19.2 | 15.1 | 8.0 | 9.5 |
| Foxton | 34.8 | 13.4 | 4.1 | 6.8 |
| Pahiatua | 19.9 | 10.7 | 11.0 | 0.7 |
| Bulls | 14.5 | 14.4 | 53.5 | 48.2 |
| Shannon | 13.0 | 14.1 | 17.6 | 10.4 |
| Woodville | 16.8 | 12.5 | 6.3 | - 0.7 |
| Ashhurst | 15.4 | 27.9 | - 22.4 | 43.8 |
| Foxton Beach | - | 46.8 | 3.4 | - 15.0 |
| Longburn | - 0.4 | - 1.3 | - 10.7 | 2.3 |
| Bunnythorpe | 7.8 | 12.7 | - 8.5 | - 14.2 |
| Halcombe | 16.8 | 14.8 | - 6.6 | - 1.5 |
| Tokomaru | 2.5 | - 6.4 | 12.4 | - 5.9 |
| Rongotea | 17.3 | 20.5 | - 36.5 | - 2.4 |
| Sanson | 11.5 | 40.7 | - 33.8 | 9.5 |
| Kimbolton | 22.9 | - 2.4 | 21.6 | - 4.8 |
| Linton | - | - | 30.3 | 4.0 |
| Cheltenham | - | - | - 7.4 | - 16.0 |
| Tangimoana Beach | - | - | - | - 5.4 |
| Himatangi Beach | - | - | - | 13.6 |

Source: Department of Statistics.

TABLE V

NUMBER OF PERSONS PER MOTOR VEHICLE 1925-1968, NEW ZEALAND

| | | | | | |
|---|---|---|---|---|---|
| 1925 | 11.4 | 1940 | 5.4 | 1955 | 3.7 |
| 1926 | 9.6 | 1941 | 5.5 | 1956 | 3.5 |
| 1927 | 9.1 | 1942 | 5.6 | 1957 | 3.4 |
| 1928 | 7.8 | 1943 | 5.7 | 1958 | 3.2 |
| 1929 | - | 1944 | 5.9 | 1959 | 3.2 |
| 1930 | 6.8 | 1945 | 5.9 | 1960 | 3.1 |
| 1931 | - | 1946 | 5.9 | 1961 | 3.0 |
| 1932 * | 8.2 | 1947 | 5.8 | 1962 | 3.0 |
| 1933 * | 7.9 | 1948 | 5.4 | 1963 | 2.9 |
| 1934 * | 7.9 | 1949 | 5.2 | 1964 | 2.8 |
| 1935 | 7.6 | 1950 | 5.0 | 1965 | 2.7 |
| 1936 | 7.0 | 1951 | 4.7 | 1966 | 2.6 |
| 1937 | 6.3 | 1952 | 4.2 | 1967 | 2.5 |
| 1938 | 5.9 | 1953 | 4.0 | 1968 | 2.5 |
| 1939 | 5.4 | 1954 | 3.8 | | |

* Including Trailers.

Source: Department of Statistics.

TABLE VI

TIME OF COMMENCEMENT IN INWARD JOURNEY

a.m.

| | 6.00 7.00 | 7.01 8.00 | 8.01 9.00 | 9.01 10.00 | Other* | Totals |
|---|---|---|---|---|---|---|
| Number | 73 | 275 | 86 | 6 | 5 | 445 |
| Per Cent | 16.4 | 61.8 | 19.3 | 1.3 | 1.1 | 99.9 |

* Includes part-time and night-shift workers.

TABLE VII

TIME OF COMMENCEMENT OF OUTWARD JOURNEY

p.m.

| | 3.00 4.00 | 4.01 5.00 | 5.01 6.00 | 6.01 7.00 | 7.01 8.00 | Later | Other* | Totals |
|---|---|---|---|---|---|---|---|---|
| Number | 21 | 255 | 155 | 3 | 2 | 4 | 5 | 445 |
| Per Cent | 4.7 | 57.3 | 34.8 | .7 | .4 | .9 | 1.1 | 99.9 |

* Includes part-time and night shift workers.

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