THE CHALLENGE OF FLAX:

A Study of New Zealand Woolpack and Textiles Limited, Foxton, and its Employees.

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By

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PREFACE

"Flax is the life blood of Foxton" - a truth or a myth? This often repeated remark by past and present residents prompted the study of its one major industry, New Zealand Woolpack and Textiles Limited and its employees. To give the study a wider perspective, it has been set against the background of the flax industry as it developed in New Zealand prior to 1933. This terminal date marked the virtual collapse of New Zealand's export trade in flax fibre and the establishment at Foxton of the Company of New Zealand Woolpack and Textiles Limited.

Although the firm continues to play a vital role in the economic and social affairs of Foxton, flax in recent years has been of declining importance to the industry as it has diversified its manufactures into products which no longer have flax as their prime raw material. If plastic fibres are substituted for flax in the manufacture of woolpacks, and there is a strong possibility, flax growing and milling would be of even less significance for the people of Foxton than they are today.

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provided the inspiration and stimulus which saw this investigation through to its eventual completion.

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CHAPTER 1:

CHARACTERISTICS OF THE NEW ZEALAND FLAX INDUSTRY PRIOR TO 1933.

Introduction

The story of the New Zealand flax industry can be divided conveniently into two sections. The first covers the period from its origins until about 1930; the second from the early 1930's to the present day. During the first period the emphasis was primarily upon producing flax line fibre[1] for export, while the second period witnessed the final demise of the export trade in line fibre and the change to supplying the fibre requirements of the home market. This first chapter confines its attention to the earlier period.

Long before the arrival of the first Europeans to the shores of New Zealand, Polynesian man had appreciated the value of flax, or harakeke as he called it. For the Maori, flax was one of his principal resources, and he made extensive use of its leaves to manufacture clothing, baskets, nets, mats, ropes and innumerable artefacts. In making use of the leaves, the Maori either used them exactly as they were obtained from the plant by splitting them longitudinally into strips of the desired width, or else the leaves were decorticated by laborious scraping to lay bare the fibres, which once obtained were twisted, plaited, or woven in a great variety of ways.[2]

The flax plant, a native of both New Zealand and Norfolk Island, was a distinctive feature of the natural landscape and was widely distributed in a variety of habitats. It occurred most abundantly in lowland swamps in association with raupo, but it also grew in alluvial soils and was to be found growing at altitudes of up to 4,500 feet. Small wonder then, in view of its widespread distribution and abundance, that to the pre-European Maori preparing flax fibre, economy was not a consideration and he was able to select the best leaves from the most suitable plants and reject the others. The Maori method, although extremely wasteful of raw materials, produced a quality of fibre which was very fine, soft, and quite free from any surplus leaf tissue.

Early European Interest in Flax

The plant attracted the interest of the early European visitors to New Zealand. Cook commented favourably upon it in his journal covering his first visit to New Zealand in 1769. He forecast many useful and important purposes for the plant and believed that it would be a great acquisition to England.[3] Banks, the famous botanist accompanying Cook on this voyage, likewise expressed interest in the plant, and noted the existence of at least two species of flax. Efforts on the part of Banks to propagate the plant in England from seeds he had taken back with him were, however, unsuccessful.[4] It was left to two botanists on Cook's

second voyage in 1772, J.R. & G. Forster, to give the plant its botanical name, Phormium tenax. The name derives from a Greek and a Latin word, respectively, phormos (a basket) and tenax (strong), the allusion being to baskets which the Maoris made from the leaves.[5]

With the establishment of colonies in New South Wales, and in Norfolk Island, official interest in the possibilities of Phormium tenax, first awakened by Cook's reports, was increased further by the presence of the plant in Norfolk Island. Phillip and successive Governors of New South Wales expressed interest in obtaining supplies of flax, but they first of all needed the services of Maori workers skilled in the preparation of the flax. Rather cavalierly they spoke of securing "a flax-dresser or two", and actually kidnapped chiefs on one occasion to do what the latter regarded as the work of women and slaves.[6] Although they imparted what little knowledge they possessed about flax-dressing, the authorities were convinced after observing their efforts that the native method of preparation was too tedious. What was needed was some sort of machine for dressing the flax.[7] The development of just such a machine was to engage the interest of many people in the years ahead.

The Growth of an Export Trade in Flax Fibre

Meanwhile, until a suitable machine could be devised for use in flax-dressing, early traders in New

Zealand had to rely on the Maoris for their sources of dressed flax fibre. A trade in flax developed as early as 1809, and thus, along with whaling, sealing and timber exploitation, it represented one of the earliest European economic activities in New Zealand. Enterprising Sydney merchants sent agents to selected parts of the North Island coast to barter with the local Maoris for shiploads of flax, and it became the staple line of trade at Mahia, Mokau, Waikato Heads and Maraetai, in the Hauraki Gulf. Between the years 1828 and 1832 no less than £50,000 worth was sold in Sydney alone.

Indeed, Sydney at this stage was developing a profitable entrepot trade based on flax. In the main, the re-exported flax fibre went to Britain, where for a short time it fetched considerably higher prices than those paid by the Sydney merchants. One of the first shipments of fibre to England was in 1818, when 60 tons, valued at £2600, was exported via Sydney merchants. A measure of the profitability of this trade for Sydney merchants is evidenced by the fact that in 1830, 841 tons of fibre exported to Sydney at £17 a ton, brought £45 a ton in England.

For the most part, the exported fibre was used in rope-making, but there were experiments afoot to discover other profitable uses for the line fibre. In 1836, John Murray wrote a book on the value of <u>Phormium</u>

tenax and had it printed on paper made from the fibre. Others, however, were not sufficiently inspired by his example to want to emulate him. Apart from experiments in producing paper from Phormium, attempts were being made to use it in the manufacture of sailcloth.

So long as a keen demand was maintained for flax fibre, the Sydney merchants did their best to meet it. The merchants were, of course, very dependent on the Maoris continuing to supply them with the dressed fibre. For the most part, initially at least, the indigenous New Zealanders were only too ready to comply with the increasing demands for dressed flax. Their desire to obtain muskets and gunpowder was sufficient inducement to cause them to undergo the laborious task of preparing quite large quantities of fibre for sale in Sydney. The armament race which Hongi triggered off after his return from a visit to England in 1820[8] gave added impetus to the flax trade and exports rose rapidly from the first shipment to Sydney in 1818 to a peak of over 10,000 tons in 1831. After the boom years of 1830 and 1831, however, the British demand for fibre fell away and the trade languished.

Factors Contributing to the 'Slump' in the Flax Trade

A combination of factors contributed to the sudden 'slump' in the flax fibre export trade after 1831. First, there was the problem of badly prepared fibre being marketed in Britain. Unscrupulous traders, in their

anxiety to capitalise on a buoyant market, sold inferior quality fibre at boom prices. The effect of this malpractice was to give the whole trade a bad reputation from which it did not recover for many years.

Second, by this stage the Maoris had a sufficiency of arms and ammunition for their immediate needs, and this meant that they were not so ready to bargain for the product of their labour. Furthermore, the Maoris were disgusted with the drastic drop in prices following the boom of 1830/31 and their production fell off. Some of the Maori leaders, too, were becoming increasingly concerned at the disruptive effects of the flax trade on their traditional way of life and were advocating a return to customary modes of living.

Third, a considerable controversy had arisen in Britain over the use of Phormium fibre in the manufacture of ropes. Exhaustive tests, trials and experiments were made into the nature and potentialities of Phormium tenax from 1818 onwards in Britain and elsewhere. The results of these investigations were often conflicting. For example, ropes from Phormium were tested in Portsmouth in 1819 and again in Sydney in 1820, in both instances with some success; but ropes made under the Harris patent at Grimsby came in for adverse criticism between 1832 and 1835. Although expert opinion differed in the evaluation of the worth of flax, there was strong

evidence to suggest that ropes made from New Zealand flax swelled in wet weather, did not stand up to splicing, and wore badly. Even if the evidence was not always conclusive, it was sufficient to erode the confidence of potential buyers.

Efforts to Mechanise the Stripping of Flax

Despite fluctuations in the demand for Phormium fibre, strenuous efforts were maintained by those whose faith in its potential worth remained unshaken to find a satisfactory method of mechanically stripping the leaf. The major problem to be overcome was to find a process which would successfully eliminate the gummy or mucilaginous substance in the Phormium fibre. Considerable energy and large sums of money were sometimes devoted to achieving this end. For example, one of the earliest pioneers of mechanical stripping was M.J.J. Donlan, who commenced his experiments as early as 1809 and persevered with them for over twenty years, but never achieved complete success. He is claimed to have spent over £20,000 on his experiments.[9]

Perseverance and tenacity of purpose certainly seem to have been important traits of early experimenters. A variety of methods were tried to separate the glutinous mucilage from the fibre - soaking, scraping and even using steam - but to little avail. In 1852 in England, Chevalier Claussen claimed success for

his method of immersing the leaf first in an alkaline and then in an acid solution. According to the experimenter, the Phormium fibres were freed completely from the gummy substance and reduced "to the pulpy fabric of cotton".[10] However, the general abortiveness of this and other experiments seems evident from the fact that in 1856 the Auckland Provincial Government went to the length of offering prizes totalling £4,000 for the person who discovered and invented an efficient means of preparing Phormium tenax.[11]

A definite step forward was made in 1858, when the London flax-millers, Pye and Company, produced Phormium fibre which was said to compare very favourably with other fibres and to be superior to native-dressed material. An investigating committee from Taranaki corroborated that Pye's machinery was satisfactory and was capable of crushing 3 tons of flax daily.[12]

In 1861, Messrs. Purchas and Ninnis patented a machine which relied upon percussion instead of rolling to separate the fibre from other tissues and water instead of alkaline solutions for washing. The reviving interest in Phormium tenax which marked the period from 1861 to 1871 was reflected by the fact that a total of 28 patents were granted to inventors of flax dressing machines during this decade. A concomitant of this interest was the upsurge in the number of mills and a rapid rise in the quantity of line fibre exported.

Between 1865 and 1871, the annual quantity exported rose from 2 tons 14 cwt. to 4,248 tons 10 cwt., with a maximum of 5,470 tons in 1870. Prices per ton for the dressed fibre fluctuated widely during this seven year period from a minimum of £15. 5. 0. (1868) to a maximum of £89. 0. 0. (1866) and averaged £33. 5. 0. The estimated total value of fibre exported for this period was £281,898 compared with £17,909 for fibre exported before 1865.[13]

Cyclical Variations in the Flax Fibre Export Trade

Throughout the nineteenth century and into the twentieth century New Zealand's export trade in dressed flax fibre experienced alternating periods of prosperity and slump. The main factor behind the incipient instability of the industry seems to have been the fluctuating level of demand for the New Zealand fibre on the world fibre markets. This in turn was affected by the availability of other competing fibres such as manila hemp and sisal.

Following the successful introduction of mechanical methods of fibre preparation, an attempt was made to improve the image of the product by changing its name from "New Zealand flax" to "New Zealand hemp" with favourable results. The reviving demand for flax fibre, which more or less coincided with the American Civil War, was shortlived, however, and from 1873 to 1887 the fibre trade experienced a lengthy depression. Disruptions to

the supply of rival fibres[14] were responsible for shortages of fibre on the world markets and assisted the recovery of the New Zealand industry during the latter part of the 1880's. Another factor contributed to this recovery, and from the long term point of view it was most significant. This was the invention of the automatic harvesting binder. Until then, the principal use of flax fibre had been for cordage, a use for which it had never been eminently suited. This new use created fresh possibilities for the better grades of Phormium fibre.

By 1870, throughout New Zealand there were 161 mills, working 342 machines, and employing 1,706 men and 62 women. For this year the estimated total output was 4,257 tons of fibre. Auckland had the largest number of mills with 54, followed by Otago with 40, Canterbury with 24, Southland with 17, and Wellington (the majority in the Manawatu) with 14. Nelson, which in the early days of the colony had taken a lead in fostering the fibre industry, had only 2 operational mills with 3 machines and a total annual output of 18 tons. Despite the large number of mills in Auckland, Canterbury produced the greatest quantity of fibre (1,531 tons per annum), followed by Auckland (1,138 tons), Otago (581 tons), and Wellington (508 tons).[15]

The small-scale nature of the New Zealand flax industry, which generally characterised the industry for the nineteenth century, contributed to its instability.

In general, there was little permanent capital in the industry, and for the most part those engaged in it were more interested in making a quick profit than building a solidly based industry. Their attitude was reflected in the proliferation of ramshackle mills, which tapped local supplies of green leaf until these were exhausted. Mills were then either abandoned or transferred to a fresh locality. With such a little stake in the future of the industry, it is not surprising to find that the quality of the line fibre produced was extremely variable and little interest was evinced in efforts by the government to effect improvements in the methods of fibre production.

Flax Milling in the Manawatu

Although a sporadic trade in flax developed with the Maoris of the Manawatu in the years following the settlement of Wellington in 1840, another twenty years elapsed before European mills began to establish themselves in the district. There were numerous natural stands of Phormium tenax awaiting exploitation in the swampy terrain, and it is not surprising to find that the staple product of the Manawatu in the early days of settlement was flax.[16]

By the late 1870's there were several mills in and around Foxton, which was to become the centre of the district's flax industry. Buick noted with pride that one of these mills kept no less than six strippers at work.

He stated that "the systematic manufacture of what otherwise would have been a waste product of the land not only attracted population by offering a profitable field for labour, but it also meant a valuable increase in the wealth produced".[17]

Two brief case studies may bring out something of the character of flax milling in the Manawatu of yester years, and the changes that were effected with the passage of time.

To C.J. Pownall, subject of the first case study, goes the signal distinction of being the person to establish the first flax mill in Foxton. Before establishing his mill in 1869, he had managed a flax mill in Thames for five years, and prior to that had had twenty years' experience in the Irish linen flax industry. Thus, unlike many contemporary millers, he could claim a considerable experience in the milling business. Of an inventive turn of mind, he produced and patented a machine which would mechanically strip the flax green leaf.

The machine, made in England to his specifications, was based on the percussion method of dressing flax. The success of his venture was threatened when the ship carrying his new plant became stranded on the sand bar at the mouth of the Manawatu River. Happily, salvage operations were successful, and by August, 1869 the mill was operational. A newspaper clipping of that

day described the mill as "one of the best in the Colony, and with its own wharf and tramways running to the different sheds and stores and every contrivance at work to save manual labour."[18]

Although the fibre produced by Pownall was of superior quality, the mill could only produce a ton of dressed fibre a week. Thus, while prices for fibre remained high the mill remained a viable venture, but when prices fell, as they did early in 1873, the mill's operation became uneconomic and it closed shortly afterwards.

This, however, was not to be the last of flax milling in Foxton, and whenever prices for fibre took an upward turn new mills were established. In all, some fifteen flax mills have operated in Foxton at various times, but of these only one survives.[19]

George Craw is the subject of the second case study.[20] Unlike Pownall, Craw was first a land-owner and then, for a period, a flax miller. He first acquired a land holding at Linton in 1897. To his nucleus of a few acres of semi-drained swamp, he added within the next few years additional land to create an estate in excess of 1500 acres. During the next twenty years his primary activity on the estate was the milling of flax and "the mill itself became one of the largest industrial works in the Manawatu."[21] At the height of

its production the mill, with four flax strippers, operated 22 hours a day on power supplied by a 220 h.p. gas generator.

The bulk of the fibre produced by this mill was exported to Britain, only a small percentage being retained for use by local rope-makers, and some tow was supplied to a Southland paper mill.

As a result of increased drainage the natural stands of flax on the estate became weakened, and to this could be added the depradations of the yellow leaf disease. These troubles brought a temporary halt to milling operations in 1918. Re-opened in 1926, the mill operated for a brief period at a reduced capacity with only one electrically driven stripper at work. By then pastoralism was assuming greater significance than flax milling, and with the final closure of the mill in 1928 the era of flax milling in the Linton district had at last come to an end.

The End of the Flax Exporting Era

The beginning of the twentieth century found the New Zealand flax industry recovering from yet another of its recurrent depressions. In an effort to bring greater stability to the industry the government of that day undertook two measures. The first was to introduce a system of grading fibre to prevent a poor

quality product from reaching the export markets. The second involved the introduction of a system of guaranteed prices for millers producing fibre to an acceptable standard. Although these two measures did much to raise the standards of the industry, they did not prevent the fortunes of the industry from still being very closely tied to the vagaries of overseas demand.

Fluctuating demand was still an anathema to the industry, but during the first two decades of the century an average annual export of 20,000 tons of line fibre was maintained, which represented an annual harvest of 200,000 tons of green leaf.[22] The outbreak of World War 1 gave a fillip to the industry and with the prevailing high prices for fibre, the annual export value of it rose during the last three years of the war to over £1 million.[23] This all time peak, however, did not last for long after the cessation of hostilities. The extension of the sisal growing industries in East Africa and Java, together with the dumping of accumulated war stocks of cordage on to the world market, caused the New Zealand industry to decline. After 1925 the decline gathered momentum until by 1933 New Zealand exports of flax line fibre had virtually ceased.[24]

To some extent the final failure of the export trade in New Zealand hemp was hastened by the fall off in areal extent of natural stands of Phormium tenax. Until about 1900 natural stands of flax had been the

primary source of green leaf for milling, but by then the drainage of swamplands which accompanied the spread of European settlement had begun to make serious inroads into these supplies of green leaf. After 1920 an attempt was made to counteract this diminishing supply with the establishment of plantations of selected varieties of flax. In 1929 it was estimated that more than 2,000 acres of flax had been planted in the preceding four years.[25] By this stage, however, the export industry was in its dying stages and it needed more than the establishment of plantations to revive it.

The reasons for the industry's fluctuating fortunes and the eventual failure of Phormium on the world cordage fibre market have been succinctly summarised, thus:

1. It was available only in comparatively small quantities - a maximum of 28,000 tons in a world hard fibre demand approaching 400,000 tons.

2. As a cordage fibre its quality was more variable and tended to be inferior to manila and sisal. These defects were due in part to
   (a) difficulties in separating the fibre from the leaf
   (b) variations of plants occurring in natural and induced areas, and
   (c) the number of small mills operating and a large element of opportunism which attended the working of some of them.

3. After 1930 the increased quantities of sisal from East Africa and the economic depression in the ensuing years dealt a death blow to the industry.[26]

Despite strenuous efforts made at various times to retrieve the situation by improving machinery, instituting a grading system, and later by research work on plant breeding and fibre processing, these did not avert the final collapse of the export-based industry.

Footnotes

1 A technical term used to distinguish long fibres from short fibres.

2 A comprehensive and detailed account of Maori usage of flax is given in McCay, 15-33.

3 Sparrow, 333.

4 Banks' identification of two species of flax was correct. They are named Phormium tenax and Phormium colensoi, and the latter is the smaller of the two. Although Banks was unsuccessful in his efforts to propagate Phormium seed he took back to England with him, a later attempt by a different person was successful. From Kew, where it was established in 1789, the plant was distributed to many parts of Europe, and flourished particularly well in southern Ireland and on the western coast of Scotland. In general, however, the severity of the European winter inhibited its growth on the Continent.

5 Jeanne H. Goulding, 703.

6. As a result of a request from Lieutenant-Governor King the Lords of the Admiralty despatched a ship, the Daedalus, under the command of Lieutenant Hanson, to New Zealand. Hanson enticed two young Maoris aboard and conveyed them against their will to Norfolk Island in 1793.

7 McCay, 45.

8 Hongi pawned his presents in Sydney and turned the proceeds into muskets and gunpowder.

9 McCay, 87.

10 McCay, 124.

11 McCay, 127.

12 McCay, 130. The modern method of stripping flax also uses this crushing technique, after which it is thoroughly washed.

13 Hector, 125.

14 Supplies of manila hemp from the Philippines were seriously curtailed by an epidemic among the natives harvesting it. About the same time social and political disturbances in Mexico seriously affected the world supply of sisal.

15 McCay, 166.

16 Buick, 142.

17 Buick, 301.

18 Quoted in Flax Through the Century, 5.

19 A list of flax mills, together with their dates, can be found in Flax Through the Century, 16-17,

20 Thomson, 64-69, gives a more detailed account.

21 Thomson, 64.

22 Poole and Boyce, 41.

23 Sparrow, 340.

24 Poole and Boyce, 41.

25 Holt, 22.

26 Poole and Boyce, 42.

CHAPTER II

HISTORY OF NEW ZEALAND WOOLPACK AND TEXTILES LIMITED.

Rebirth of the Flax Industry

In 1933, a private company, New Zealand Woolpack and Textiles Limited, was formed at Foxton.(Fig.1) Its formation was an attempt to revive an almost defunct flax industry.

New Zealand Woolpack and Textiles Limited proposed to use locally grown fibre, which had previously been exported, as the basis of a textile industry, initially devoted to the production of woolpacks for the home market.

At the official opening of the new factory in 1934, Sir Alexander Roberts, the then Chairman of the Board of Directors of the new company, listed the advantages of the new industry to New Zealand as fourfold. First, the manufacture of woolpacks would represent a considerable saving in overseas funds. Sir Alexander instanced the sum of £148,154 being the cost to New Zealand of imported woolpacks in the year 1928. He also quoted the value of imported jute bags and sacks as £436,000 for the same year, thereby implying a possible diversification in the future of company manufactures. Second, the new enterprise could in the future become the basis of a valuable export trade in woolpacks to, for example, Australia, which in the years immediately prior

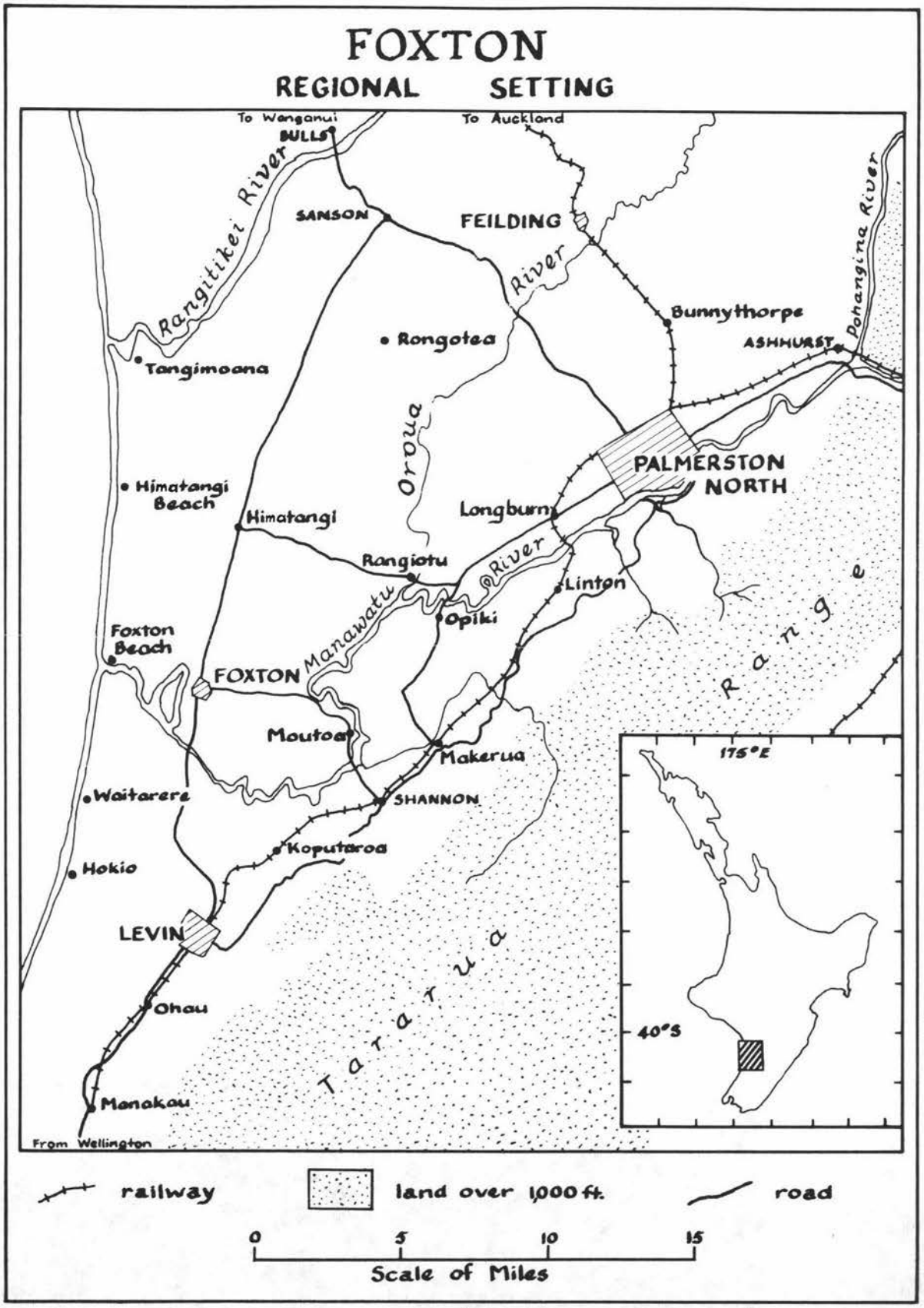


Figure 1. FOXTON: ITS REGIONAL SETTING.

to 1934, was importing jute woolpacks, bags and sacks for an average annual expenditure of £4,000,000. Third, the new factory would provide employment for a considerable number of workers in Foxton, a small town badly affected by the economic depression of the day. At the same time, the growth of ancillary services, concomitant with the presence of the textile factory, would further widen the employment opportunities in Foxton and neighbouring districts. Fourth, the company would provide an avenue for local investment and the development of local initiative and entrepreneurship.

The company was founded with a nominal capital of £300,000. As originally planned, the company was to establish three fully equipped factories - one in the Auckland Province, another in Southland, and one in the Wellington Province at Foxton. Of the three, only the last-mentioned eventuated. In March, 1934, the Foxton factory (built on a nine-acre site donated by Mr. M. Perreau, the then Mayor of Foxton) commenced operations.

Early 'Growing Pains'

The new and prosperous era, so hopefully forecast by Sir Alexander Roberts for the local flax industry, was not to be realised immediately, and the industry, especially the new textile factory at Foxton,

was to experience several shattering bouts of 'growing pains' during its formative years, before becoming firmly established as an economic and viable production unit.

The first bout of 'growing pains' occurred at the end of the company's first year of operation, and nearly resulted in its demise.

(1) The Failure of the Cloghill Process

The near disaster came about through the failure of the Cloghill process, a process that was of central importance in the preparation and softening of the hard Phormium fibre before weaving. Its failure incurred a serious financial loss for the company, when, because of the unsatisfactory nature of its product, the company was forced to recall the entire first year's production of woolpacks. Furthermore, if the company wanted to continue operating in the future, it must be committed to the replacement of the newly installed, yet quite unsatisfactory, preparation and spinning plant.

(2) High Production Costs

Vital, too, to the success of the company was a solution to the problem of high production costs of the locally manufactured flax woolpacks. If the company were to sell its product in the open market in direct competition with the cheaper imported jute woolpacks, it could do so only at a price substantially below that of

the current production costs. Faced by these dilemmas, the company's directors entered into negotiations with the government for assistance, and at the same time, appointed to the Board a Mr. F.W. Vickerman, whose original capacity was that of a receiver.

Vickerman, after a careful examination of the affairs of the company, decided that its financial troubles were largely attributable to misfortune and mismanagement, and decided against winding up the company. In 1936, Vickerman was appointed Managing Director; under his direction, and with government backing, the firm was reorganised and there was a gradual replacement of the unsatisfactory preparing and spinning plant.

At the same time, the government introduced measures to give the company some degree of protection from foreign competition, by fixing a price and quota for all woolpacks distributed in the Dominion. In effect, by setting a limit on the number of woolpacks that could be imported from overseas in any one year, the Foxton company was given a virtual monopoly over the production of one-third of New Zealand's annual requirements of woolpacks.

By the end of 1939, annual production of woolpacks at the Foxton factory stood at 360,000,[1] almost double the production figure of 1934. Accompanying this rise in the output of woolpacks, was a consequential

increase in the factory demand for flax green leaf, the prime raw material used by the industry.

(3) Raw Material Supplies

Additional green leaf supplies were, however, not always readily available, and it became increasingly apparent to the company executives that, unless the green leaf supply could be regulated to meet the growing demand for flax line fibre, the future well-being and expansion of the woolpack manufacturing industry would be in serious jeopardy.

In response to a request by the company for assistance in this field, the government purchased, in 1939, the Moutoa Estate, which contained the last, large, natural stand of Phormium in the Manawatu, and which in the past had been the chief source of flax for the Foxton factory. Plans were formulated for the full development of the 5,000-acre estate as a producer of Phormium green leaf.

Quite unforeseen were the effects of flood control in the area. A government survey of the flax resources at Moutoa Estate, in 1949, revealed the extent to which the natural stands of flax were dying as a result of changes in the character of the swamp following flood control measures. A concerted effort was required by the company and the Department of Agriculture to remedy the situation. It was decided that cultivated stands of

flax, suited to the prevailing, drier conditions, would be planted. Although this action was successful, because of the five-year delay in harvesting newly planted flax, it was necessary to look further afield to supplement the supplies of local green leaf for the Foxton factory; this, in addition to the measures introduced specifically in 1948 by the government to help the industry.

Included in these measures were (1) the introduction of a system of guaranteed prices for fibre and tow; (2) governmental loans to millers as an incentive for them to develop their flax plantations; and (3) the institution of a royalty of £4.50 per ton for cut green leaf to encourage farmers to maintain flax crops. This last measure was intended to make the return to the farmer from flax cultivation comparable to that which he would receive if the same land were given over to sheep farming.

Flax production and development work on the Moutoa Estate received a sharp setback with the devastating floods of 1953. In 1950, the annual production of cut green leaf from the Moutoa Estate had been 10,985 tons, but in 1954 this was reduced to 6,326 tons.[2] From 1954, additional supplies of green leaf for the Foxton stripping mill have come from growers in Paremata and Tangimoana. During the rest of the decade, these two sources were necessary to supplement the diminished supplies of green leaf from the Moutoa Estate, but since 1960, with the recovery of production on the Moutoa Estate, they have

been of declining significance. (Table I).

It is beyond the capacity of the Foxton stripping mill to supply more than approximately 50 per cent of the present (1969) unscutched fibre[3] requirements of the Foxton factory, and supplies have had to be drawn from other flax stripping mills in New Zealand. (Table I and Fig.2). These flax stripping mills have obtained their green leaf from local private growers. Few of the flax mills are independently owned and operated today. The Westport stripping mill, established by the government in 1943, taps West Coast (South Island) stands of flax. Another stripping mill, Kerepeehi, situated between Paeroa and Thames, was established by "Woolpacks" on capital supplied by the government. In 1956, the Foxton company acquired a controlling interest in Pukeo Flaxmill Limited, which is situated on the eastern margin of Lake Wairarapa.

The Government's Role

To a considerable degree, the fact that the company had not failed in these earlier years, but had achieved a measure of success,[4] must be attributed to governmental assistance. Not only did this include financial support, vital to the industry in its formative years, but also, as was previously evidenced, protection from overseas competitors and aid in regulating the supplies of Phormium tenax green leaf.

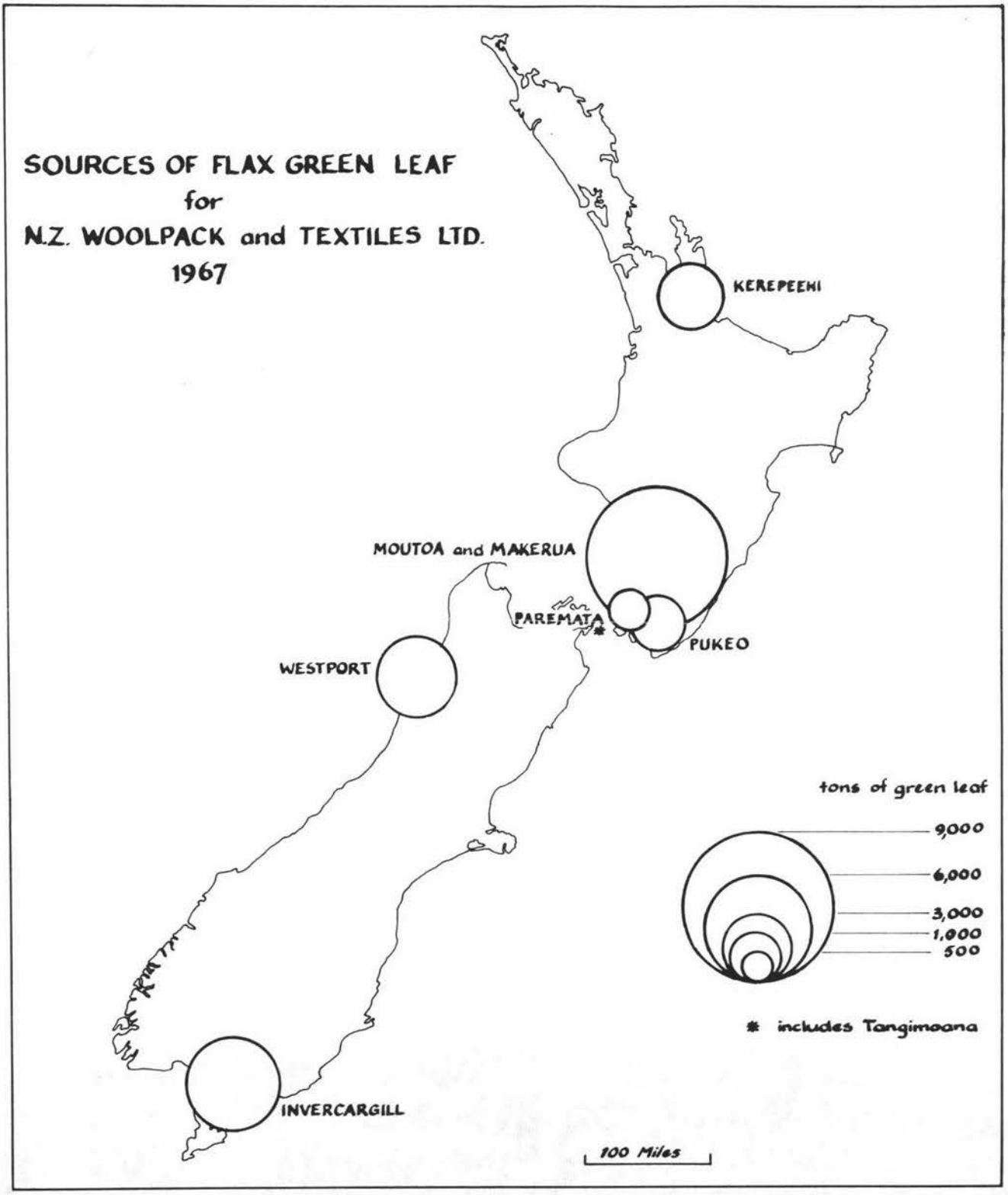

SOURCES OF FLAX GREEN LEAF
for
N.Z. WOOLPACK and TEXTILES LTD.
1967
KEREPEEHI
MOUTOA and MAKERUA
PAREMATA *
PUKEO
WESTPORT
INVERCARGILL
tons of green leaf
9,000
6,000
3,000
1,000
500
* includes Tangimoana
100 Miles

Figure 2.

TABLE I.

GREEN LEAF SUPPLIED TO NEW ZEALAND WOOLPACK AND TEXTILES LIMITED FOR SELECTED YEARS 1950-1967. (TONS).

	1950	1955	1960	1965	1967
Moutoa Estate [a]	10,985	7,461	5,204	8,098	8,576
Paremata [b]		2,394	4,216	1,097	853
Invercargill [c]	N.A.	N.A.	3,514*	3,346	4,067
West Coast (Westport) [c]	N.A.	N.A.	1,617*	3,367	2,555
Thames (Kerepeehi) [c]	N.A.	N.A.	1,876*	1,715	1,722
Wairarapa (Pukeo) [c]	N.A.	N.A.	567*	1,155	1,813
Blenheim [c]	N.A.	N.A.	644*	294	Nil

Notes: [a] Includes a small quantity of green leaf from Makerua.

[b] Includes some flax from Tangimoana.

[c] Approximations derived from unscutched fibre data. Conversion formula used:

7 tons green leaf = 1 ton unscutched fibre.

* 1962 figures.

Sources: New Zealand Woolpack and Textiles Limited and Department of Agriculture, P.N.

In 1940 the government became the major shareholder in the company, when it converted the second mortgage debenture it held on company assets into shares.[5] In its new capacity, the government has the right to appoint five of the eight members of the Board of Directors. As a major shareholder, the government has maintained a close interest in the affairs of the company. In 1942, for example, the government once more came to the assistance of the company. In an effort to overcome wartime labour shortages at the factory, the government provided a number of State houses to attract prospective employees to Foxton.

Recurrent Labour Shortages

A shortage of labour has been a recurring problem for the firm. In its location, the Foxton factory has the distinct advantage of being in close proximity to its principal source of raw material, the Moutoa Estate, but in terms of labour supply, the factory's situation in a small, country town has posed problems. Suitably qualified staff, particularly engineering, technical and administrative staff, have not always been easy to obtain, and once obtained, not easy to retain. Similar shortages of production line workers have been experienced at various times, and have created bottlenecks at different points in production, with the result that on occasions, the output of finished products has suffered.

At different times during the history of the firm, attempts have been made to ameliorate labour shortages by attracting labour to the factory through the provision of cheap-rental housing for employees. In addition, to the State houses provided by the government in 1942, the company also erected, or purchased, about the same time, a total of twelve houses for staff. Shortages of labour again troubled the company in 1947 and two hostels were provided for workers in an effort to alleviate this shortage. A men's hostel was opened and, at various times, was filled with immigrants from different countries, none of whom stayed long. Eventually, the hostel system stabilised and provided the company with an average of eight male workers. A Maori girls' hostel was also opened and girls from Ratana Pa and from the Gisborne district were engaged. This hostel provided a much needed labour force for the woolpack looms for a reasonable period.

In 1950, a further shortage of operators resulted in the output of woolpacks being less than half that of machine capacity. Once again, the company embarked on a house building programme and received further assistance from the government with the provision of additional State housing. Despite all efforts to attract labour, the shortage of weavers in 1955 was more acute than ever. Compared with the 1954 production of 406,000 woolpacks, that for 1955 was 369,000, the lowest

figure for four years and one which was insufficient to keep the plant operating at a truly economic output.[6] While the government continued with its policy of maintaining full employment for workers throughout New Zealand, labour shortages at the Foxton factory remained a chronic problem. During the 1960's, however, the steadily worsening position of New Zealand's balance of payments forced an abandonment of the full-employment policy of the government, and the rise of unemployment levels during the past three years has brought to an end, temporarily at least, chronic labour shortages at the Foxton factory. In addition to this, a steadily increasing degree of mechanisation has reduced the demand for labour in some areas of the factory operation, especially in the weaving section.

Expansion and Diversification

Despite recurring labour problems, which were first manifest in World War 11, the company continued to expand. A fillip to the industry came with Japan's entry into the Second World War, in December, 1941, on the side of the Axis powers. Occupation of the Philippines by the Japanese cut off all supplies of manila hemp to the Allies and, with the supplies of jute similarly threatened, the New Zealand Phormium industry became of tactical importance, supplying part of the cordage requirements of the Allied navies. The manufacture and

supply of gun mats, which the Foxton factory undertook for the Royal Navy, was to prove of great significance to the future of the company.

With the cessation of hostilities in 1945, the Foxton company found itself with large stocks of unwanted gun mats on its hands. The ease with which these surplus stocks were sold on the home market encouraged the company to enter the field of manufactured floor coverings. (Appendix C). From a small beginning, a large-scale production of floor coverings has developed, more than rivalling woolpack production in importance. Over the years, the production of floor coverings has diversified, so that today the company not only produces Phormium matting, but also produces three distinctive types of wall-to-wall woven carpeting.

The company entered this field of manufacture at a time when the home market was suffering from a dearth of floor coverings, the aftermath of wartime shortages and restrictions. There was a ready market for matting and, at a later date, carpeting. A dominion-wide organisation, Ronald Griffith Limited, with its head office in Wellington and branches in Auckland, Hamilton, Christchurch and Dunedin, handles the advertising and distribution of the company's floor covering products.

In recent years the company has turned its attention to developing markets for its floor coverings

overseas. During the latter part of 1963 the company was represented in the New Zealand Trade Mission to the North American Pacific Coast, and the possibility of developing an export trade was studied carefully. Three years later, in March, 1966, the company was again represented in a New Zealand trade mission, this time to Australia, and an export office in Sydney was set up as a direct outcome of the work of the mission. Today, the careful investigations and advertising have borne fruit, and markets for the company's floor coverings are being developed in the United States, Canada and Australia, which together take approximately 7 per cent of the company's total production.

The company's continued success in this field can be attributed in part to its unceasing efforts to improve the standard and appearance of its finished products. One important step in this direction was the installation, in 1955, of a modern dyeing plant, the most up-to-date of its kind in New Zealand at that time. With the addition of this new plant, the fibre could now be dyed in the sliver instead of in the yarn, as had previously been the practice, thereby greatly improving the penetration of the dyes in the fibre.

Apart from Phormium fibre, which was used extensively in the manufacture of matting and "Brussella"[7], other raw materials used by the company for its other floor

covering manufactures include rayon, sisal and jute. (Table XXXV). The last two are imported. Approximately 400 tons of sisal are imported annually from East Africa, while a smaller quantity of jute yarn, about one hundred tons annually, is imported from Dundee, Scotland, where it has been spun into yarn.

The processes of expansion and diversification were taken a step further in 1955 when the company, in equal partnership with Manawatu Carding Company Limited of Palmerston North, established at Foxton an associate company, Bonded Felts Limited, which was intended to utilise the waste materials from the company's main factory. Bonded Felts Limited commenced in a modest way on the manufacture of underfelts and padding for hot-water cylinders. This developed into an excellent outlet for the textile company's waste fibres and soon Bonded Felts Limited was supplying the mattress trade with pads to cover springs, the motor upholstery trade with shaped pads for construction of motor bodies, and various manufacturing concerns with cut padding for the making of furniture. In 1959, New Zealand Woolpack and Textiles Limited bought out Manawatu Carding Company's interest, so that today Bonded Felts Limited is a wholly owned subsidiary.

During the years following its inception in 1933, New Zealand Woolpack and Textiles Limited has, despite its various setbacks, grown from a small manu-

facturing industry mainly concentrated on the production of woolpacks to a thriving industry noted for the diversity of its production, a tribute to the initiative and far-sighted planning of the company's management. The extent to which the company's organisation has grown in the decade from 1956 to 1966 is revealed in the following table, (Table II). It can be seen from this, that while the number of employees in the decade 1956 to 1966 increased by approximately 22 per cent, the production of most items has increased by a much greater extent. Woolpack woven cloth increased by 60 per cent, the number of woolpacks manufactured by 50 per cent and the production of woven carpeting and matting by 45 per cent. The only drop in production, a substantial one, was for carded hemp and tow and is explained by the fact that the demand for plaster board, the chief product of carded hemp and tow, has fallen off as many other types of wallboard have come on to the market during this period.

Mechanisation

The increased per capita output of factory employees shown in Table II suggests an ever-increasing degree of mechanisation and the introduction of labour-saving devices. Although the preparing and spinning plant is basically the same as that installed in 1936/37, the greatest innovations have occurred in the weaving department, resulting in the higher per capita production of these workers. Thus, the replacement of weaving looms

TABLE II.

EMPLOYMENT AND PRODUCTION,
NEW ZEALAND WOOLPACK AND TEXTILES LIMITED,
1956 AND 1966.

	1956	1966
Number of employees	320	390
Total Factory Floor Space (sq. yds.)	16,940	24,200
Annual Consumption of Fibre (tons)	2,900	3,300
Woolpack Cloth Woven Annually ('000 yd)	2,800	4,500
Carded Hemp and Tow (tons)	450	200
Number of Woolpacks ('000)	400	600
Woven Carpeting and Matting ('000 sq.yd.)	275	400

Sources: Green Spears and The Foxton Flax Industry.

in the factory has been more for reasons of obsolescence and not for the fact that they were outworn. During 1961 a full complement of modern, labour-saving looms, on order from Britain for some time, was finally installed. The following year, 1962, saw the installation of a modern 'Goods' machine, which did much to improve the efficiency of the long-fibre preparing and spinning plant. These examples, together with other innovations carried out, helped to explain the increased output of the factory.

In Retrospect

Before concluding this study of the history of New Zealand Woolpack and Textiles Limited, one should re-examine the advantages of the industry to New Zealand, as seen by Sir Alexander Roberts in 1934, and assess the extent to which his predictions have been realised. His forecast that the company would eventually provide employment for at least 300 employees has been more than borne out, for today on the payroll of the company and its subsidiary, Bonded Felts Limited, are approximately 400 workers. Second, in the last financial year, 1967/68, the Foxton factory manufactured 720,000 woolpacks. If the price of imported jute woolpacks is set at £1.50 each,[8] the saving in overseas funds would have been in excess of £1,000,000. Third, the company in more recent years has proved to be a most profitable investment for shareholders, the declared dividend payable to "A" and "B" shareholders having risen from 4 per cent in 1941 to 8 per cent in 1967.[9] The

manner in which the company's directors and management have seized every opportunity to expand and diversify production over the years suggests that local initiative and entrepreneurship have not been lacking. Fourth, although the company has never developed an export trade in woolpacks, a promising start has been made in the export of its floor covering manufactures, a development not foreseen by Roberts when operations commenced.

Footnotes

1 As well as this increase in production, the finish of the woolpack cloth had been greatly improved by the installation in 1937 of a 100-ton mangle and a high speed cropping machine.

2 Both figures include small quantities of green leaf from Makerua.

3 Unscutched fibre is the fibre produced after the green leaf has been stripped. It takes approximately seven tons of green leaf to produce one ton of unscutched fibre.

4 After its rather inauspicious start, the Foxton company had, by 1941, at last achieved a sounder financial position. For the first time, the company was able to pay its shareholders a dividend, 4 per cent per five shilling share.

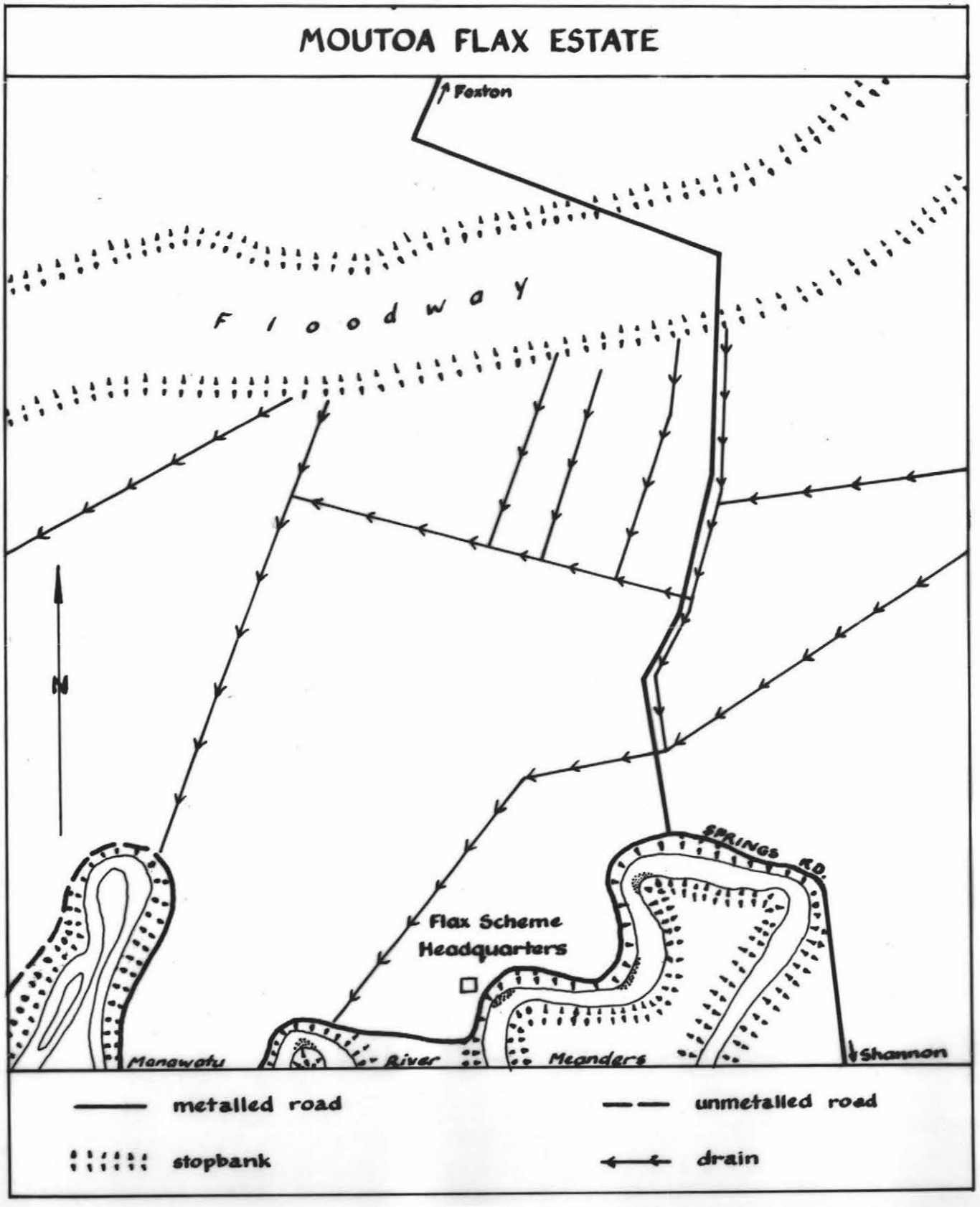
5 In 1968, the authorised, issued and fully paid share capital of the company was 100,013 "A" shares of $1.00 each held by private investors, and 400,000 "B" shares of $1.00 each held by the government.

6 The bottlenecks in production, created by shortages of weaving labour, prompted the company to establish a branch factory at Levin, where labour was more readily available, in 1956. The 3,000 sq. ft. factory, intended primarily to relieve congestion in the manufacture of "Brussella" carpeting and woolpacks, was equipped with eight "Brussella" looms and twelve woolpack looms. The factory has a staff of approximately twelve.

7 Apart from "Brussella" carpeting, two other distinctive types of floor coverings are produced, "Cordella" and "Gayleen". (See Appendix C.). During 1968 the Company launched a new type of matting, "Duramat", for the home market.

8 The price of imported jute packs fluctuates widely, however, varying from 90 cents to $1.50. (Mr. W. Hale, General Manager of New Zealand Woolpack and Textiles Limited, in a personal communication to the writer.)

9 Annual Reports to Shareholders of New Zealand Woolpack and Textiles Limited, 1942 and 1968. Also see footnote 5 above.


MOUTOA FLAX ESTATE
Foxton
Floodway
N
SPRINGS RD.
Flax Scheme
Headquarters
Manawatu
River
Meanders
Shannon
metalled road
unmetalled road
stopbank
drain

Scale: 20 chains to 1 inch.

Figure 3: MOUTOA ESTATE: AN AERIAL VIEW.

CHAPTER III

THE MOUTOA ESTATE FLAX DEVELOPMENT SCHEME.

Situation of the Moutoa Estate

The principal source of *Phormium tenax* green leaf for the Foxton flaxmill of New Zealand Woolpack and Textiles Limited is the Moutoa Estate. The estate, originally owned by F.S. Easton, lies roughly midway between Foxton and Shannon on the north bank of the Manawatu River, some seven miles from its mouth. Situated in a shallow basin, the heights of which vary from 6 feet to 20 feet above mean sea-level, the estate comprises an area of 4,950 acres.

The whole of its area at one time was subjected to flooding from the Manawatu River,[1] in frequency as often as three or four times a year. As a consequence of the regular inundations, the ground was largely swampland and the peaty soil overlain, in parts, by rich silty loams, provided an ideal habitat for natural stands of *Phormium tenax.*

Acquisition of the Moutoa Estate by the Government

Accompanying the spread of settlement in the Moutoa district was a reduction in the areas of natural flax, as swamplands gave way to drained farmlands. By 1938, the Moutoa Estate was the last large area of natural

flax in the Manawatu and even this resource was being threatened by careless exploitation. In an effort to ensure that the Foxton textile industry would have sufficient supplies of flax to maintain and in time expand its production, the government purchased the Moutoa Estate from Easton in 1939.[2]

Responsibility for the management and development of the estate was handed over to the Department of Industries and Commerce. Initially, they were assisted by members of the Department of Scientific and Industrial Research, who did research into the ecology of Phormium communities, the improvement of plant breeding and diseases affecting the flax plant. The results of these studies were used as a basis for the policy blue-printing the future development of the estate. For the estate to be developed to its optimum level, natural stands of flax would have to give way to sturdier, selected breeds grown on a plantation basis.

Putting this policy into practice necessitated planned scientific replanting and selecting the varieties of flax best suited to the prevailing conditions of soil and topography. In March, 1949, management of the estate was transferred from the Department of Industries and Commerce to the Department of Agriculture. It was felt that the latter Department, with its scientific facilities and personnel skilled in land-use matters, would be better qualified to continue the development of

the estate.

Early Developmental Problems

Before the estate could be developed as a flax plantation it was necessary to clear the land and sow cover grasses.[3] During the initial stages of development, when large areas of virgin ground had to be brought into cultivation, capital outlay was considerable. Much of the ground could not be ploughed and harrowed until extensive areas of native vegetation had been cleared and stumps removed.[4] Of the last-mentioned, there were a great number for, at some stage in its past history, the area had been the site of a primeval forest, and where the soil had shrunk, through drainage, these old stumps appeared above the surface.[5] In addition, there were 1,600 acres of willows awaiting clearance. Until a cheaper method was devised, willow clearance cost in the region of £35-£40 an acre, a formidable amount to be met. The introduction of ring-barking, spraying with hormone and subsequent burning, radically reduced this cost to approximately £5 an acre.

Replacement of Natural Flax Stands

Once the initial breaking-in of the land had been completed, work was begun on planting the specially selected, plantation varieties of flax. Over the years, the gradual replacement of naturally occurring

stands of flax has been effected. Today, there are three main varieties grown on the estate - native swamp flax, Seifert's Special and Ngaro - their distribution corresponding closely to particular contour intervals, levels at which each variety thrives best.

Ngaro, the variety yielding the greatest quantity of leaf - approximately 100lbs/bush or 57 tons/acre - grows best between the fourteen and sixteen-foot contours. Despite its capacity for high yields, it is especially vulnerable to various fungus diseases and plant losses are high. As a consequence, only a limited area of 60 acres is planted with this variety at present.

By far the most widespread of the three varieties is Seifert's Special. Although it has a lower yield of green leaf than Ngaro - approximately 80lbs/bush or 35-40 tons/acre - it is a much hardier variety. It grows best in areas lying between the nine and fourteen-foot contours and occupies approximately two-thirds of the total area planted in flax.

Native swamp flax is grown in the lowest-lying areas of the estate - between the six and the nine-foot contours. It has the lowest yield of the three varieties, its yield varying from 45-65lbs/bush. It is, however, the only variety that does well in these damper tracts, and it occupies a little under one-third of the

planted area.

Careful nurturing of these selected varieties has done much to improve the productivity of the flax grown on the estate. Whereas twenty years ago a cut of 20 tons of flax per acre was considered a good average yield,[6] today, the estate management can boast of an average yield per acre of 30-40 tons of green leaf.

Unlike the majority of plants, Phormium does not produce a true strain from seed; propagation of the correct variety is done by splitting a parent bush into a number of fans, which are then replanted in a suitable manner. The most satisfactory spacings for planting have been found to be 4.5 feet between plants and 6 feet between rows. (Figure 4). These spacings enable the maturing bushes to spread out sufficiently to maintain a healthy condition. Approximately 1600 flax fans are planted to every acre. Planting in this way from fans, gives a mature bush in approximately five years, after which period the bush is ready for its first cutting. Generally, it is expected that planted flax areas will need replanting after having been cut four times, say in 17-20 years from the time of the previous planting.

Originally, the entire planting operation was carried out by hand. The introduction of a mechanical auger for the preparation of holes to receive

Figure 4. PHORMIUM PLANTATION.

Initially Phormium is planted at 4.5 ft. intervals.

Figure 5. LOADING OF LEAF - PAST.

Typical-sized load of leaf before the use of tractors.

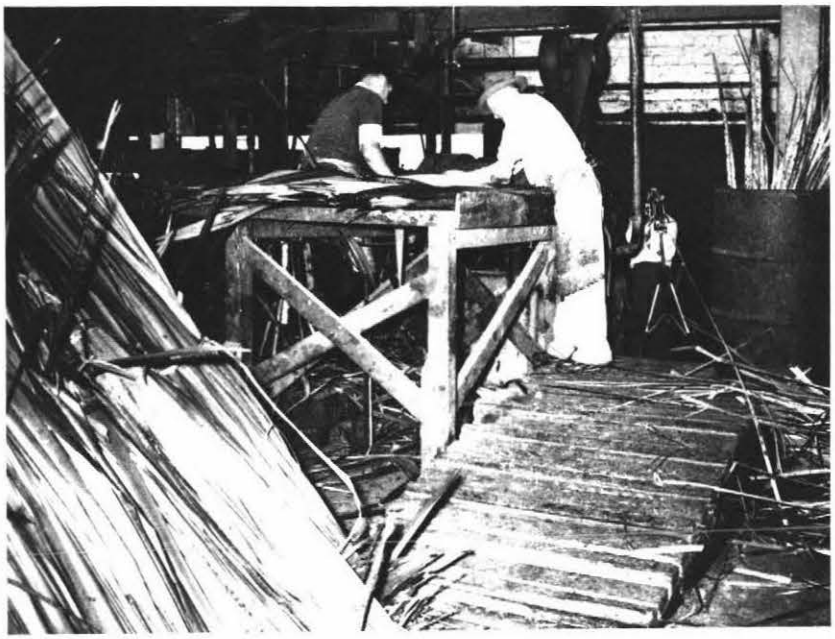


Figure 6. STRIPPING MILL.

At the stripping mill the leaf is stripped or decorticated by mechanical means, and the vegetable matter removed from the fibre in the leaves.

new fans,[7] has helped to reduce the labour needed, and has also contributed to a reduction in planting costs.

Harvesting Flax

At present rates of cutting (8,000 - 9,000 tons per year), it has been estimated[8] that it requires approximately 150 acres of flax to be replanted each year merely to maintain stocks of flax for cutting at the existing level. While the estate was still being developed, however, the rate of planting out new fans of flax was generally more than double this figure.[9]

The task of cutting flax, unlike the planting operation, has remained a labour intensive job. The cutter uses a slasher to remove the leaves of the whole bush, making his cut slightly above the rhizome. Attempts, through the years, to introduce mechanical aids for the cutter have been unsuccessful. The use of a chain-saw to carry out this task proved fraught with difficulties. Despite repeated experimentation with its use, including the reversal of the blade, the saw constantly clogged and became overheated. The swampy nature of the terrain, too, proved an obstacle for the vehicle carrying the chain-saw kept bogging down in the soft soil. Eventually, the idea of mechanising the cutting process had to be abandoned.

When cut, the flax leaves are tied in bundles of approximately 80 lbs weight. The bundles of

cut green leaf are then loaded on to trailers, which are hauled by the "trammies" to the collecting depot. (Figs. 5 and 7). Here the flax is weighed and individual tallies of each cutter are recorded. From this point the green leaf is carried by truck to the Foxton flaxmill, a distance of some six miles. Transportation of the green leaf from Moutoa to Foxton is done by a local general carrier, whose contract price in 1969 was $1.20 per ton.

Flax is cut all the year round, thereby providing the Foxton factory with regular supplies of green leaf for its stripping mill, (Fig.6) and also giving flax cutters full-time, as distinct from seasonal, employment. There are, however, quite marked seasonal variations in the quantity of green leaf cut on the estate. During the wetter winter months inclement weather and difficult ground conditions contribute to shortened cutting time. On an average the weekly tally of cut green leaf rises from a winter minimum of approximately 200 tons to a summer maximum of approximately 300 tons.

Reference to the annual production figures of cut green leaf from the Moutoa Estate (Table III) show some marked variations in the amount cut annually. From a peak production of 15,192 tons in the 1951/52 season, cut green leaf output slumped during the ensuing years to a minimum output in the 1960/61 season of 5,467 tons - approximately one-third of the output of the peak season.

TABLE III.

ANNUAL PRODUCTION OF CUT GREEN LEAF SUPPLIED TO THE FOXTON FLAXMILL BY THE MOUTOA ESTATE.

(TONS).

1948/49:	11,970
1949/50:	12,287
1950/51:	13,944
1951/52:	15,192
1952/53:	13,645
1953/54:	9,691
1954/55:	7,097
1955/56:	6,754
1956/57:	5,861
1957/58:	7,358
1958/59:	5,744
1959/60:	7,710
1960/61:	5,467
1961/62:	8,897
1962/63:	8,755
1963/64:	8,924
1964/65:	7,865
1965/66:	8,806
1966/67:	8,467
1967/68:	8,760

Source: Department of Agriculture, P.N.

Figure 7. LOADING AND WEIGHING OF LEAF - PRESENT.

Phormium from the swamp being weighed and loaded simultaneously. Contrast with the labour intensive Fig.5. Note the stopbank in the background.

This slump in production over the intervening years is attributable to a variety of factors, rather than any one single factor.

Factors Contributing to a Fall-off in Cut Green Leaf

The 1950's was a period when a good deal of developmental work on the Moutoa Estate was being done. As natural stands of flax died out they were replaced by plantation stands, and even when the new flax fans were successfully established, five years had to elapse before the first harvest of green leaf could be cut. Weed infestation and the disease "yellow leaf" hampered the growth of green leaf and wrought their toll on production. Furthermore, considerable losses were sustained as a result of periodic flooding of the estate.

Lack of adequate measures to control the flood waters of the Manawatu River proved an anathema to developers of the Moutoa Estate during the 1940's and early 1950's. Early piecemeal efforts by individual property owners in the Moutoa district to control flooding in the area were totally inadequate. A more comprehensive plan, the Farquhar Scheme, proposed the erection of stop banks beside the parts of the river most susceptible to flooding. But this scheme did not entirely solve the problem of flooding for the Moutoa Estate. At times of exceptionally high floods, the estate was to be used as a ponding area for surplus flood waters, which were diverted to the estate by means of spillways left in the stop

bank running parallel to the estate. A final solution to the estate's problem of flooding had to await the completion of the Manawatu Catchment Board's coordinating flood control scheme in 1963.

In 1953, a 21-foot flood was responsible for hindering development work on the lowest-lying reaches of the estate for two years. On another occasion, a rapid rise in the water table of a newly planted flax area resulted in the loss of all the flax fans. In all, this particular area had to be replanted three times before the Moutoa Estate management was able to obtain a harvest of green leaf from it. In addition to these costly setbacks, the Department of Agriculture was responsible for meeting the cost of any maintenance on the stop banks lining the estate. In one year alone, when the stop bank was badly breached by flood waters, it cost the department £5,000 to have repairs effected. It was not until the Department of Agriculture agreed to pay rates towards its share of river protection work that it was absolved from the costly responsibility of maintaining the Moutoa Estate's stop banks.

The improvement of flood control measures over the years has been a major factor in the development of the estate. But the elimination of flooding by the Manawatu River has also created certain difficulties in the propagation of flax on the estate. The change from swampland to virtually dry land did much to hurry the

demise of the natural flax stands. In the past, regular flooding had helped to keep the "yellow leaf" disease in check. With the elimination of this natural check, the disease could quickly ravage the estate's flax crop, causing its complete loss. Aware of this ever present danger, the Moutoa management has experimented with ways of effecting controlled flooding of given areas within the estate, but the methods used have been either too costly or unsatisfactory. D.D.T. sprays can check the spread of "yellow leaf" but since the cost of spraying the whole area with this pesticide would be very great, this measure is reserved for only dire emergencies and so far has not been resorted to.

But any disadvantages stemming from the elimination of flooding on the estate are far outweighed by the advantages. The threat of losing newly planted areas in flax has largely disappeared; and it is now possible to work the estate all the year round, thereby reducing, if not eliminating, seasonal fluctuations in the supply of cut green leaf to the Foxton stripping mill. Another profitable venture, made possible only by the elimination of flooding from the estate, is livestock grazing.

Livestock on the Moutoa Estate

Since the Moutoa Estate has been under the management of the Department of Agriculture, live-

stock have been grazed, with the Department of Lands and Survey collaborating in this venture. Apart from the presence of a few house cows, livestock activities have been restricted to the grazing of dry stock. Reference to Table IV shows that in the decade from 1958 to 1967, the number of dry sheep and rams grazed on the estate has increased by approximately 400 per cent. On the other hand, the number of steers has declined rapidly after 1965, when the estate had reached full development as a flax producer. One thing the table does not show is the large seasonal variation in the number of livestock carried on the estate in any one year. In 1968, for example, approximately 26,000 dry sheep and rams were being grazed at the peak of the season, while during the winter months when feed is less plentiful, this figure was virtually halved.

Several benefits have accrued from growing flax and running livestock on the estate as complementary activities. First, the estate's capacity as an income producer has been increased. For instance, in 1968 the sale of wool and livestock reaped a return of approximately ₿48,000. Second, essential to the sound management of the flax plantation is the prevention of weed infestation. If unchecked, weeds severely limit the growth of the flax fans. By sowing the intervening areas between the flax fans, and then keeping these areas grazed, the livestock act as an important check to weed infestation. Third,

TABLE IV.

LIVESTOCK GRAZED ON THE MOUTOA ESTATE BY THE DEPARTMENT OF LANDS AND SURVEY, 1958-1968.

Year Ending 31st March.	Dry Sheep and Rams	Steers
1958	4,111	403
1959	5,659	426
1960	4,082	321
1961	5,446	348
1962	6,337	415
1963	7,295	510
1964	8,092	480
1965	9,274	434
1966	13,898	274
1967	16,470	193
1968	15,726	75

Source: Department of Lands and Survey.

flax plants thrive best in fertile soils. Before the introduction of flood control, regular deposits of silt from an annual average of three or four floods maintained soil fertility at a high level. The defecations of grazing animals have, however, helped to compensate for the loss of flood silt deposits by contributing to the maintenance of soil fertility. Fourth, in the early stages of development when large areas of the estate had to be cleared of natural vegetation before they could be planted in flax, grazing bullocks made a substantial contribution to this task of clearance.

The presence of livestock on the Moutoa Estate has, however, had its disadvantages. The major problem to arise from the close juxtaposition of grazing and flax growing has been the damage done by the livestock to the flax. Stock are particularly partial to the young and succulent shoots of the flax plant. Steers in particular have caused the greatest damage to the flax; this helps to account for their decline in numbers in recent years as the estate has approached full development as a flax producer. Another problem connected with livestock management on the estate stems from the prevailing dampness underfoot during the winter months especially. Unless great care is taken the sheep become prone to footrot. It has also been noted that sheep previously grazed on cobalt deficient lands when grazed on the Moutoa Estate frequently become

susceptible to a form of paralysis; sheep losses from this cause have been recorded as high as 40 per day. Despite these problems the advantages from running livestock on the estate far outweigh the disadvantages.

Receipts from the Moutoa Estate

Profits derived from livestock grazing on the estate are equally shared between the Departments of Agriculture and of Lands and Survey. The latter Department is responsible for the purchase and sale of stock, together with the provision of a manager and two shepherds to care for the stock. The former Department provides the grazing lands and the infra-structure needed for livestock farming, which includes the provision of fencing, yards and a woolshed.

In some years, especially in the early 1950's when the price of wool was high and the estate's flax plantation was still being developed, receipts for livestock exceeded those for flax. In 1951, for instance, livestock receipts were $42,000 and those for flax were $38,000. More recently the positions have been reversed. In 1968, flax receipts amounted to $58,000, some $10,000 more than the amount received from livestock.

The Moutoa Estate Work Force

As the Moutoa Estate has become more fully

developed, there has been a noticeable decline in the number of workers employed, a trend which is apparent in Table V. Reference to this table shows that in 1953 five persons categorised as "Management" were employed and comprised a manager, two overseers and two clerks. Three years later the number of clerks was reduced to one. In 1963, with the appointment of an assistant manager, the number of overseers was reduced to one. Six years later, the management staff was again reduced and with the retirement in January, 1969 of Mr. G.B. Miller (manager), the estate is being run by his deputy and a clerk.

A similar retrenchment of staff is noticeable under some of the other categories. Since 1958, no further virgin land has been broken in, and from the end of 1965 all flax planting operations have ceased. The only category to show any rise in employment is "Cutters", when the number employed increased by a third in 1965, and the higher level has been maintained since then. The possible significance of these changes is discussed in Chapter V.

During the last thirty years, there has always been a ready availability of labour for work on the Moutoa Estate. Indeed, there have been occasions when there has been a surfeit available. In times of economic recession, as was the case in 1967-68, the Moutoa Estate has been used by the Department of Labour

TABLE V.

WORKERS EMPLOYED ON THE MOUTOA ESTATE

SELECTED YEARS, 1953-1968.[10]

Year	(1)	(2)	(3)	(4)	(5)	(6)*
1953	5	16	10	4	30	6
1956	4	16	15	4	15	6
1959	4	16	10	0	15	6
1962	4	11	10	0	15	6
1965	4	11	10	0	20	4
1968	3	6	0	0	20	4

* (1) Management
(2) Labourers
(3) Planters
(4) Stumpers/Ploughers
(5) Cutters
(6) "Trammies"

Note: Categories (1) - (4) are employed by the Department of Agriculture, (3) and (4) by contract.
Categories (5) and (6) are contract workers engaged by New Zealand Woolpack and Textiles Limited.

as an avenue of relief work for the unemployed. Relief work for upwards of forty men was provided during 1968 for unemployed in the district, labour being drawn from as far afield as Palmerston North.

Apart from managerial staff and those employed by the Department of Lands and Survey to look after the livestock, the remainder of the workers today live away from the estate. Until recent years, the majority of the non-resident workers lived in either Foxton or Shannon. Now, if the contract labour employed on the estate by New Zealand Woolpack and Textiles Limited is disregarded, all non-resident employees are domiciled in Shannon. A 30-cwt Thames bus, owned and operated by the Department of Agriculture, is used to convey employees to and from their work at Moutoa.

In 1968 twelve Maoris were employed on the estate. Two of this number were employed by the department, and the balance by "Woolpacks" as flax cutters. Thus, 50 per cent of the flax cutting gang comprises Maoris.

Despite the arduous nature of flax cutting, it is a much sought after occupation because of the high wages that can be earned. Cutters in 1968 received a contract price of $5.60 per ton of cut green leaf, and it was not uncommon for a cutter to earn wages in excess of $3,000 a year. In many respects the gang of flax cutters

can be regarded as an example of a "closed union", changes to the composition of the gang for the most part taking place only through the retirement or death of one of its members. When a change does occur, the replacement is selected from a lengthy waiting list of applicants.

Maintenance and Expenditure

Regular maintenance of the 21-mile network of drains on the Moutoa Estate is essential for its sound management. Twice yearly the drains, varying in width from 3.5 to 32 feet, have to be sprayed and cleared of weeds and debris. This work in recent years has cost the Department of Agriculture, which is responsible for the maintenance of half the total length of the estate's system of internal drainage,[11] an average of £700 per annum. Every fourth year it is necessary for the drains to be cleaned with a dragline. The work, done by private contractors, cost, in 1968, £1.00 per chain.

If the size of the estate is taken into account, the 1968 annual wage bill of £24,000 for workers (exclusive of contract labour) was comparatively small. In the past, while the estate was still undergoing development, the wage bill for contract labour averaged £34,000 (£24,000 for planters and £10,000 for stumpers). Another expenditure borne by the Department of Agriculture covers the maintenance of plant and machinery on the estate, and this has averaged in recent years £5,000 per annum.

Present Stage of Development

The Moutoa Estate today represents a considerable capital investment. According to the last government valuation (1966), the unimproved value of the estate was £270,000, the value of the improvements was assessed at £426,640, and the total capital value (exclusive of machinery) was £698,640. Included in the improvements were six dwellings and other buildings,[12] 21 miles of fencing and of drains, grassing, cultivation and other minor items. The estimated capital value of the machinery in 1968 was £50,000.[13]

With 4,100 acres of the total area now planted in flax, the Department of Agriculture considers the Moutoa Estate fully developed as a flax plantation.[14] According to a departmental spokesman, until such time as New Zealand Woolpack and Textiles Limited indicates that supplies of Phormium green leaf are no longer required, the Moutoa Estate, in line with present policy, will continue in its primary role, that of the major supplier of the flax needs of the Foxton company.

Footnotes

1 Since the completion of the Moutoa Flood Control Scheme in 1963, the Moutoa Estate has been free from flooding by the Manawatu River. There is still, however, some localised surface flooding from drains, but two pumps located in strategic parts of the estate prevent this surface flooding from reaching serious proportions. See McNeill-Adams, 30-32 and Appendix B, for an account of the development of flood control measures in the Manawatu.

2 Not all writers concur regarding the date of purchase. A date frequently mentioned is 1940. The date, 1939, has been authenticated by the Department of Agriculture.

3 English grasses have proved unsuitable because of the damp, soft conditions underfoot. A sturdier grass, such as fescue, is more tolerant of such conditions and can withstand heavy grazing.

4 During World War 11, the Moutoa Estate was turned into a camp for conscientious objectors. They made a start with stumping the property. Some time later, the Department of Agriculture employed private contractors to continue with the removal of stumps. By the time stumping operations on the estate were halted at the end of 1957, an area of approximately 2,000 acres had been cleared.

5 Poole and Boyce, 45-46.

6 Poole and Boyce, 50.

7 Eggers gives an account of attempts to mechanise planting operations.

8 Personal communication from G.B. Miller (May and August, 1968), the then Manager of the Moutoa Estate. Unless otherwise acknowledged, the writer is indebted to Mr. Miller for figures pertaining to production, plant and employment on the Moutoa Estate.

9 Saunders, 1961, 206.

10 Estimates supplied by G.B. Miller. More precise data was not available from the Department of Agriculture.

11 The other half is maintained by the Moutoa Drainage Board.

12 Other buildings: 4-stand woolshed; workshop and tractor shed; grass and manure sheds; tool shed; office block.

13 Machinery schedule: 5 tractors; 5-ton truck; 2 x 4-wheeldrive utilities; 30 cwt. Thames bus; 2 x 3-ton swamp ploughs; double furrow plough; 3 tandem discs; 3-ton Anderson harrow; 5½-ton roller; seed box; seed drill; 1 set levelling irons; 2 grass-cutting machines.

14 The only unplanted area, an area of approximately 280 acres, is one of the most difficult parts of the property to get flax stands satisfactorily established, and is designated as a "stock movement area". The discrepancy of approximately 500 acres is accounted for by ground taken up with stop banks, service roads, buildings and stockyards.

CHAPTER IV.

AN ANALYSIS OF DATA OBTAINED FROM A SAMPLE OF EMPLOYEES OF NEW ZEALAND WOOLPACK AND TEXTILES LIMITED. THE SIGNIFICANCE OF THE FIRM.

The Field Survey

Between September and November, 1968 a survey was conducted among a sample of employees of New Zealand Woolpack and Textiles Limited. The survey sought to establish some objective criteria for measuring the economic and social significance of the firm, together with its employees, for Foxton. The major instrument used in the survey was a questionnaire (Appendix A), and details of the raw data collated from the completed questionnaires are set out in Appendix B. What follows is (1) a brief description of the sampling method; (2) an analysis of the survey data; and (3) some conclusions that have been drawn regarding the significance of the firm.

The Sample

The questionnaire was applied to a sample of employees of New Zealand Woolpack and Textiles Limited. An attempt was made, with the help of the company management, to obtain a reasonably representative cross-section of the employees. From an annotated sheet supplied by the management, a list of approximately 25 per cent of

the total employees was compiled, so that a representative range of categories (which took account of length of service, position, and ethnic group) would be included in the final sample.

Application of the questionnaire was done by means of personal interviews. For the final analysis, 75 of the completed questionnaires were usable, which represented a sample of 20.11 per cent of the labour force at the time of the survey. The purposive sampling procedure used in this survey, based on information supplied by the management, can be expected to yield reasonably representative information on conditions in the total labour force. Since, however, this method departs from accepted random sampling procedures it is not possible to make formal inferences from the sample to the population from which it was drawn.

Unless otherwise stipulated, percentages relate to the total survey sample. In general, percentages used in the text are rounded off to the nearest whole number, while those appearing in tables are expressed accurately to two decimal places.

Analysis of Survey Data

The composition of the final sample by sexes was 81 per cent male and 19 per cent female. In terms of the male labour force, 82 per cent was European and the balance Maori. The percentage of Maoris in the female

labour force was significantly higher and stood at 43 per cent.

By age groups (Table VII), two-thirds of the Maori female labour fell within Class 1 (15-19 years), while the European female labour force was more or less evenly distributed among classes 2, 4 and 5 (respectively 20-29 years, 40-49 years, 50-59 years). With one exception, all Maori girls were single and 50 per cent had worked for the company less than one year; the balance, with one exception, had been employed from 1 - 4 years. The turnover of Maori female labour appears to be particularly high, some leaving the district and others marrying. By way of contrast, the European female labour force was composed of older women, all of whom (with one exception) were married. Their turnover, too, was less, as was evidenced by the generally longer years of service than their Maori counterparts.

Although the male Maori labour force showed greater stability than the female, when the lengths of service of the Maori and European labour forces were compared, it was noted that just over 50 per cent of male Maori workers had less than five years' service with the company, whereas 80 per cent of the male European force had five or more years' service with the company. Furthermore, none of the male Maoris had more than 20 years' service, while 26 per cent of the male Europeans had lengths of service in excess of twenty years. (Table VI).

TABLE VI.

LENGTH OF SERVICE OF MEMBERS OF THE SAMPLE AT NEW ZEALAND WOOLPACK AND TEXTILES LIMITED. (PERCENTAGES OF TOTAL SAMPLE).

Years	Europeans.		Maoris.		Totals.		
	M.	F.	M.	F.	M.	F.	T.
Under 1	2.67	0.00	4.00	4.00	6.67	4.00	10.67
1 - 4	12.09	2.66	4.00	2.67	16.00	5.33	21.33
5 - 8	8.00	1.33	2.67	0.00	10.67	1.33	12.00
9 - 12	6.67	2.67	1.33	0.00	8.00	2.67	10.67
13- 16	0.33	0.00	1.33	0.00	10.67	0.00	10.67
17- 20	10.67	2.67	1.33	0.00	12.00	2.67	14.67
21- 24	6.67	0.00	0.00	0.00	6.67	0.00	6.67
25- 28	1.33	0.00	0.00	0.00	1.33	0.00	1.33
29 plus	9.33	1.33	0.00	1.33	9.33	2.67	12.00
Totals:	66.67	10.67	14.67	8.00	81.33	18.67	100.00

TABLE VII.

PERCENTAGE OF SAMPLE IN SELECTED AGE GROUPS.

Age Groups	Europeans.		Maoris.		Totals.		
(Years).	M.	F.	M.	F.	M.	F.	T.
15 -19	4.00	0.00	0.00	5.33	4.00	5.33	9.33
20 - 29	9.33	2.67	8.00	1.33	17.33	4.00	21.33
30 - 39	14.67	0.00	2.67	0.00	17.33	0.00	17.33
40 - 49	13.33	4.00	2.67	0.00	16.00	4.00	20.00
50 - 59	17.33	4.00	1.33	0.00	18.67	4.00	22.67
60 - 64	6.67	0.00	0.00	1.33	6.67	1.33	8.00
65 plus	1.33	0.00	0.00	0.00	1.33	0.00	1.33
TOTALS:	66.67	10.67	14.67	8.00	81.33	18.67	100.00

Some 56 employees in the sample were married, and of this number 86 per cent were males. The 54 married employees with children had families ranging in numbers from one to more than seven. The median size of family in the sample was three children, while at the extreme 7 per cent of the married sample with families had seven or more children. Among the older members of the married sample with families, the rate of dependency was reduced as many of their offspring were adults and wage-earners and some were living away from home. Although 29 per cent of the married group with families no longer had any dependent children, the median number of child dependants per family remained at three. (Table VIII).

Much of the labour employed by New Zealand Woolpack and Textiles Limited is either unskilled or semi-skilled, for the demand for skilled labour is comparatively slight. Out of the total sample, 64 per cent of the workers considered their occupations required neither prior qualifications nor any training on the job. The remaining 36 per cent, however, claimed that their activities necessitated either qualifications or training. Of this latter group, 81 per cent obtained their qualifications or training while employees of the firm. Only two of the number interviewed - both qualified engineers - had university degrees. It is extremely doubtful, however, if more than 10 per cent of the company's total labour force could be classed as skilled labour or better.[1]

TABLE VIII.

FAMILY SIZE AND NUMBER OF DEPENDENT CHILDREN OF MARRIED EMPLOYEES.

(BASE = 56).

Size of Family	Percentage
No children:	7.14
1 child:	5.38
2 children:	25.00
3 children:	14.29
4 children:	17.86
5 children:	7.14
6 children:	16.07
7 or more children:	7.14
	100.00

Number of Dependants	Percentage
No dependants:	33.93
1 dependant:	10.71
2 dependants:	19.64
3 dependants:	10.71
4 dependants:	14.29
5 dependants:	7.14
6 dependants:	3.57
	100.00

The majority of those in the sample with any qualification or training were tradesmen, who had served apprenticeships.

Generally, employees lived in comparatively close proximity to their place of employment. Some 64 per cent resided within Foxton Borough, another 15 per cent lived within a half-mile radius of the Borough, while the balance (31 per cent) travelled daily from Foxton Beach (usually by private transport), three miles west.

A surprisingly small number of the sample had lived all their lives in Foxton. Approximately 75 per cent[2] indicated that they had not always lived there, but the greatest majority of these people had come from some other part of New Zealand. Only 32 per cent had lived (immediately prior to their removal to Foxton) within a thirty-mile radius of the Borough. Almost four per cent came from overseas. Table IX gives a breakdown of the length of residence in Foxton of these "new" Foxtonians. Thirty per cent of them attributed their move to Foxton as a direct outcome of their employment by New Zealand Woolpack and Textiles Limited.[3]

A considerable proportion of the employees (44 per cent) owned their homes, another 30 per cent rented homes (the great majority of these being either

State or factory houses), and the rest, single people, either lived with parents or boarded privately. The only person's home not falling within any of the categories listed in Table X was a house provided by the Maori Affairs Department for one of the firm's Maori employees.

With such a large proportion of the working force either unskilled or semi-skilled, it is to be expected that employee incomes would be generally low. Approximately 73 per cent of the employees who answered this section of the questionnaire dealing with income[4] indicated that their gross annual incomes were below £2,200, and the top 8 per cent had gross annual incomes of £3,400 or higher. By income groups, the median income of the employees was Class 4, £1,800 - £2,199. (Table XI).

Only a small minority, less than 7 per cent, indicated that they did not do most of their shopping in Foxton. When asked to estimate how frequently they would shop elsewhere, 63 per cent of the employees in the sample responded with "seldom" or "never", while another 13 per cent estimated the frequency to be once every two or three months.

Two of the most common reasons for shopping outside Foxton were that (1) shopping was combined with

TABLE IX

LENGTH OF RESIDENCE IN FOXTON.

Length of Residence	Percentage
Less than 1 year:	5.36
1 - 4 years:	10.71
5 - 8 years:	5.36
9 - 12 years:	10.71
13 - 16 years:	7.14
17 - 20 years:	16.07
21 - 24 years:	7.14
25 - 28 years:	7.14
29 or more years:	30.36
	100.00

TABLE X

NATURE OF ACCOMMODATION.

Accommodation Categories		Percentage
(1)	Factory house:	9.33
(2)	State house:	25.33
(3)	Rented, other than (1) or (2):	5.33
(4)	Own house:	44.00
(5)	Parent's home:	10.67
(6)	Boarder, other than (5):	4.00
(7)	None of the above categories:	1.33
		100.00

TABLE XI

ANNUAL GROSS EARNINGS BY INCOME GROUPS

(BASE = 62).*

Income Groups	Percentage
Less than ₵1000:	4.84
₵1000 - ₵1399:	11.29
₵1400 - ₵1799:	12.90
₵1800 - ₵2199:	43.55
₵2200 - ₵2599:	4.84
₵2600 - ₵2999:	7.68
₵3000 - ₵3399:	4.84
₵3400 - ₵3799:	3.23
₵3800 plus:	4.84
	100.00

* 13 persons declined to answer this section

some other activity, such as a social excursion to a neighbouring town, and (2) the purchase requirements were either not available locally or there was only a poor selection to choose from. Another reason advanced by approximately 8 per cent of the sample was that prices tended to be cheaper elsewhere, some being attracted by supermarket "specials" offered in larger centres such as Palmerston North or Levin. Only approximately 5 per cent said that they shopped elsewhere because they did not live in Foxton.

Clothing apparel was the most common purchase away from Foxton. Foodstuffs, too, ranked fairly high on their list of "external" purchases, some 26 per cent listing either meat or groceries or both. Branch butcheries of the Longburn C.W.S. Company at both Foxton Beach and Levin were patronised regularly by 20 per cent of the employees. The only other category of any significance was furniture, which was listed by 15 per cent of the sample.

An overwhelming proportion of the employees (93 per cent) relied on Foxton as their chief source of entertainment. Only 4 per cent of those interviewed looked beyond the town, while the balance found their sources of entertainment equally distributed between Foxton and other places. This undoubted popularity of the local town as the main venue of entertainment for the majority of the sample group is borne out in Table XII.

When asked to estimate how often each would travel beyond Foxton for entertainment, 69 per cent of the sample responded with "seldom" or "never".

In general, the places most frequented for entertainment, other than Foxton, were Palmerston North and Levin. A few of the employees (no more than 2 per cent) included Wellington. In this survey, the term "entertainment" was given an extremely broad connotation and included the whole gamut of social and sporting activities, participant and spectator sports, and cultural and recreational activities (for example, cinema, stage shows, dances, art galleries, museums, "pubs", Sunday outings, visiting friends and relatives, and so on). 24 per cent of the sample frequented a wide variety of local centres, which have been collected together in Table XIII under the entry "Other than above". All places appearing under this heading, however, are to be found in the immediate vicinity of Foxton.

A fair proportion of the sample group took an active part in the social and communal activities in Foxton through membership in a variety of local clubs and organisations. Almost 47 per cent of the total sample indicated this when they replied to the questionnaire. If allowance is made for the sixteen people in the sample who resided at Foxton Beach, and who would not necessarily be expected to support clubs and organisations in town,

TABLE XII

ESTIMATED FREQUENCY OF TRAVEL BEYOND FOXTON FOR ENTERTAINMENT.

Estimated Frequency	Percentage
Once a week:	9.33
Once a fortnight:	8.00
Once a month:	13.33
Seldom:	54.67
Never:	14.67
	100.00

TABLE XIII

PLACES OTHER THAN FOXTON MOST FREQUENTED FOR ENTERTAINMENT.

	Percentage
Palmerston North:	21.88
Levin:	12.50
Palmerston North and Levin:	32.81
Wellington:	1.56
Palmerston North and Wellington:	3.13
Levin and Wellington:	1.56
Other than above:	23.44
Not indicated:	3.13
	100.00

the percentage supporting social and communal activities in Foxton rose to 61 per cent. In general, people in this group were members of either one or two clubs or organisations.

Apart from seeking some measure of the level of participation of the sample in social and communal activities in the local town, the survey also attempted to measure the degree of leadership undertaken. In the survey almost 40 per cent of the sample indicated that they had at some stage held at least one position of responsibility in a club or organisation in Foxton.[5] The survey also revealed that at one stage or other 20 per cent of the sample living within the borough had belonged to one or more of the following organisations in Foxton: Borough Council, Junior Chamber of Commerce, Lions Club, Rotary Club and School Committee. Membership of these particular bodies or organisations would tend to indicate a more than average interest in public welfare, for organisations or bodies such as these play important roles in the community.

Forty-four people out of the total sample (59 per cent) had other members of their immediate family working for New Zealand Woolpack and Textiles Limited. Of this number, approximately 41 per cent had two or more of their immediate family working for "Woolpacks", a figure which serves to emphasise the

importance of the company to Foxton as the major single avenue of employment there. Table XIV attempts to show, in tabular form, the relationship of these other employees to members of the sample group, but fails to show the relationship accurately when a member of the sample has two or more relatives falling into different categories.

Local Significance

If the foregoing analysis of survey data, together with other available information, is used, what conclusions can be drawn about the local significance of New Zealand Woolpack and Textiles Limited? Like a two-sided coin, there are both positive and negative aspects requiring consideration.

Positive Aspects

Probably the firm's greatest significance locally lies in the fact that it is the largest enterprise in the district and employs the greatest number of people. (Fig. 8). Not only does it provide employment for 56 per cent of Foxton's total male working population, but it also provides work, in its sewing department and in other areas, for approximately 22 per cent of the total female working population.[6]

It is apparent, from this study of the firm's history, that labour shortages until recent years were a recurrent problem for the firm. Frequently, in

TABLE XIV

RELATIONSHIP OF OTHER MEMBERS OF THE FAMILY EMPLOYED AT NEW ZEALAND WOOLPACK AND TEXTILES LIMITED.

(BASE = 44)

Relationship	Percentage
Mother	2.27
Father:	11.36
Son:	18.18
Daughter:	9.09
Sister:	2.27
Brother:	15.91
Wife:	2.27
Husband:	2.27
Combination of above:	36.37
	100.00

Figure 8. AERIAL VIEW OF NEW ZEALAND WOOLPACK AND TEXTILES LIMITED.
Note its dominance in relation to the rest of Foxton.

the past, in order to solve its labour difficulties, the firm made recourse to attracting labour from other parts of New Zealand, using incentives such as cheap-rental housing. Thus, as was noted in the survey analysis, 30 per cent of those interviewed who had come to live in Foxton, came primarily because of their jobs at "Woolpacks". Therefore, it is fair comment to say that by attracting labour to the town the company has, over the years, contributed to its increase in population.

The growth of ancillary services to meet some of the needs of "Woolpacks" has likewise stimulated growth, and by promoting industry in and around Foxton it has further broadened employment opportunities in the district. The formation of Bonded Felts Limited in 1956 to utilise the waste materials of its parent company, New Zealand Woolpack and Textiles Limited, has already been noted. Again, the need to provide adequate local supplies of green leaf has been the reason for the development and growth of flax plantations on the nearby Moutoa Estate, and thus employment for planters, cutters and others. Additional employment opportunities have arisen, too, in the fields of transportation and milling. The company's considerable fleet of trucks must be serviced and maintained locally.[7] These few examples of ancillary services that stem from the presence of "Woolpacks" in Foxton, provide further evidence of the local significance

of the firm.

The growth of the company since its inception might well be expected to have stimulated growth in other sectors of the local economy. People have to be fed, clothed and sheltered, and those providing for these needs have especially benefited from the growth of the firm. Today, 4 groceries, 7 dairies, 6 restaurant-milk-bars, 2 butchers and 3 fruiterers provide foodstuffs for Foxton's population of 2,819,[8] of whom approximately one-third are dependent ultimately for their well-being upon "Woolpacks". The building industry, too, has benefited; both the state and the firm have built houses for factory employees to attract suitable labour to Foxton. (See Chapter II). Meeting the educational, recreational and social needs of factory employees has also benefited the borough. There are, for example, six educational institutions in Foxton.[9] Thus, providing for the many and varied needs of the firm's 373 employees and their families is of major significance for workers engaged in Foxton's tertiary industries.

The wages and salaries paid out by New Zealand Woolpack and Textiles Limited for the 1967/68 financial year amounted to £650,000.[10] This sum represents the combined incomes of 45 per cent of the total working force of Foxton, so that how and where these people spend their money is of great importance to the local community of businessmen. From the evidence

of the survey analysis, the bulk of the employees did their shopping in Foxton.

The extent to which the firm's employees participate in the local affairs of the community has been used as an indicator of the social significance of the firm. In the survey it was noted that 61 per cent of the employees residing in Foxton were recorded as taking an active part in the social life of the town. Furthermore, according to the survey criteria, 40 per cent of them had at some stage or other taken an important, if not leading, role in local social activities. If the validity of these measures is accepted, then the social significance of the firm for Foxton is considerable.

Negative Aspects

So far, the conclusions have dwelt upon positive aspects of the firm's local significance. Negative aspects also demand attention.

In a mayoral tribute to New Zealand Woolpack and Textiles Limited on the occasion of the company's silver jubilee in 1958, Mr. A.E. Field gave expression to a view, held in common by many other local residents, that the flax industry is (and has been in the past) the "life blood" of Foxton. The dependence of Foxton on the industry has, if anything, grown over the years, so that today if something were to threaten the continuance of the local company, the future existence of the town would

be placed in jeopardy. In short, the monolithic-like character of the company's operations in this small town, increases the town's vulnerability to economic misfortune by having such a large proportion of its "eggs in one basket".

Another negative aspect worthy of consideration is the high proportion of unskilled and semi-skilled labour employed by the company. As was noted earlier, approximately 90 per cent of the employees came within one or other of these two categories. Since the company is a major source of employment, the fact that it wants mainly unskilled or semi-skilled labour must have, to a certain extent, a deadening effect upon the level of aspiration held by the youth of Foxton, whose opportunities for more demanding local employment are so narrowly circumscribed. The remarkably high dependence of some families upon New Zealand Woolpack and Textiles Limited as a source of employment, is suggested in Tables XXXI and XXXII. (Appendix B). Almost 60 per cent of the sample had one or more of their immediate family working for the company and indeed 9 per cent indicated that they had four or more close relatives as fellow employees.

With such a prevalence of unskilled or semi-skilled labour employed by the firm, it is not surprising to find that the general level of employee incomes is comparatively low. Of those receiving less

than $2,200 per annum, the median number of child dependants was three. At the extreme, 24 per cent of the male breadwinners receiving less than $2,200 annually supported either four or five child dependants. (Table XV) These facts help to account for the poor living standards of many of the low income employees observed at the time of the survey.

National Significance of the Firm

Turning from the microcosm of the local area to the macrocosm of the nation, what has been the significance of the Foxton industry for New Zealand?

Seen in the broader context of the national economy, the Foxton industry has a minor, albeit not unimportant, contribution to make. Since its early years, the company has supplied one-third of the country's annual requirements of woolpacks, thereby saving New Zealand valuable overseas funds. In the financial year 1967/68, for example, the company manufactured woolpacks which represented an estimated saving in overseas funds of $850,000.[11]

The growth, too, of the company's floor covering manufacture has some significance for the national economy. By helping to supply the needs of the home market in this field, the company is again effecting savings of overseas funds. In 1968, the company

TABLE XV

PERCENTAGE OF MARRIED MALES WITH DEPENDENT CHILDREN, 1968, BY INCOME AND NUMBER OF DEPENDENT CHILDREN.

Income Groups	Number of dependent children						Total
$	1	2	3	4	5	6	
1000-1399		3.45			3.45		6.90
1400-1799			3.45				3.45
1800-2199	6.90	13.79	3.45	17.34	3.45		44.83
2200-2599				3.45	3.45		6.90
2600-2999	6.90		3.45			3.45	13.79
3000-3399	3.45		3.45	3.45			10.34
3400-3799		3.45					3.45
3800 plus		6.90	3.45				10.34
							100.00

Note: In some cases, incomes of employees were supplemented by other part-time employment or by their spouses working.

produced approximately 360,000 yards of floor coverings, of which yardage approximately 90 per cent was sold on the home market. This side of the company's production is also being developed as an export earner. Since 1964, when floor coverings to a value of £8,000 were exported to Canada, the value of the company's export earnings had risen by 1968 to £57,000, representing in quantity 7 per cent of the company's total floor covering manufactures.

One of the staunchest advocates of the development of secondary industries in New Zealand is Dr. W.B. Sutch. He has condemned the past over-reliance on grassland products as New Zealand's principal export earner, seeing this as the source of many of the problems relating to the country's balance of payments.[12] If one accepts his thesis that the development of indigenous manufacturing industries is essential to the development of a more balanced and less vulnerable New Zealand economy, then one is likely to regard the development at Foxton of a secondary industry, based as it is on the utilisation and manufacture of a locally produced raw material, as being of considerable significance.

At least one of the company's ancilliaries, Bonded Felts Limited, is also making a useful contribution to the national economy. Among other things the subsidiary manufactures a not insignificant proportion of the underfelt requirements of the home market. This firm also

produces plastic coated felts and, by supplying some of the needs of the local motor trade, contributes to an increased percentage of local input in the New Zealand motor industry. In 1967, Bonded Felts Limited supplied the motor trade with materials valued at £44,000, which was a rise of £17,000 since 1965.

It has already been noted that the Foxton industry achieved a degree of tactical importance during the last World War, when it supplied part of the cordage requirements of the Allies and also produced gun mats for the Royal Navy. In a world beset by political tensions, it cannot be denied that the company might once again be called upon to fulfil a similar role. In such times, the tactical importance of the industry is of much greater significance than in peace time.

Summing up, it would appear that New Zealand Woolpack and Textiles Limited assumes far greater significance for Foxton and district than it does for New Zealand. The extent its role may change in the ensuing years is examined in Chapter V.

Footnotes

1. Personal communication from Mr. W.E. Hale, General Manager of New Zealand Woolpack and Textiles Limited.

2 Cf. Hunt, 18, who found 69 per cent of the adult population was not born in Foxton.

3 Cf. Hunt, 22, Table VIII. Only 6 per cent of household heads took up residence in Foxton because of the flax industry.

4 Thirteen of the sample declined to answer this section of the questionnaire.

5 For the purposes of this survey, a position of responsibility was defined to include any of the following posts: president, chairman, secretary, treasurer, committee member, club captain, coach, and deputies of the foregoing posts.

6 For 1967. Sources: New Zealand Woolpack and Textiles Limited and the Department of Labour.

7 The firm's fleet of 12 trucks is regularly serviced by a local garage, A.D. Booth. The management declined to give any further details.

8 1966 Census.

9 Educational institutions comprise 2 primary schools, a secondary school, a play centre, a private kindergarten and a 'free' kindergarten.

10 New Zealand Woolpack and Textiles Limited.

11 Based on £1.18, the cost of an imported jute woolpack in 1968.

12 Sutch, 24-5.

CHAPTER V.

PROSPECTS OF THE FOXTON FLAX INDUSTRY.

In this concluding chapter it is proposed to examine the prospects of the Foxton flax industry under three headings: (1) the manufacture of Woolpacks; (2) the Moutoa Estate; and (3) the future of New Zealand Woolpack and Textiles Limited. Since speculation on future trends and development is fraught with many difficulties, any conclusions arrived at must be regarded as merely tentative.

The Manufacture of Woolpacks

The success of Foxton's woolpack manufactures in the past has, to a large extent, been the result of governmental policies aimed at fostering the development of the industry. For more than thirty years the government has protected woolpack manufacturing in Foxton against overseas competition, particularly that from East Pakistan and India. Without a continuation of the government's policy of restricting the inflow of imported jute packs through import licencing restrictions, and without a guaranteed price for the local product, the future of woolpack manufacturing in New Zealand would be placed in jeopardy.

At present locally manufactured woolpacks sell on the home market at a guaranteed price of $1.75 each. Even when allowance is made for a wide variation in the price of imported jute packs,[1] the local product costs substantially more than the imported one. The higher cost of the local manufacture results in part from the high costs of raw materials and labour, and these help to account for the inability of the local pack to compete on the open market with its foreign made counterpart.

Whether the New Zealand Government will continue to pursue its present policy of protecting uneconomic local industries is a matter for conjecture. In a recently published report on the New Zealand economy[2], a team of economic experts from the World Bank made strong recommendations to the government that it seriously consider the abolition of its system of import quotas. According to the report, New Zealand can ill afford the luxury of wasting its resources on uneconomic industries. If the government heeds the recommendations made, the prospects of woolpack manufacturing in New Zealand (given that other things such as raw materials, labour costs, and technology remain unchanged) appear to be not very bright.

Another factor which could give rise to changes in woolpack manufacturing is the current dissatisfaction of some overseas buyers of wool with the

traditional forms of packaging. Japanese buyers, in particular, have complained of fibre contamination in wool packaged in Phormium and jute packs. As a result of these criticisms the whole question of wool packaging has been under review in several of the leading wool-producing countries. In both South Africa and Australia alternative forms of wool packaging have been investigated. Experimental packs made of kraft paper or cardboard have yet to be proved entirely suitable, and a number of problems remain to be overcome before they would be satisfactory substitutes for vegetable-fibre packs. It is true that in using paper researchers have overcome the problem of fibre contamination, but there remains the problem of producing a pack that can withstand the pressure of dumping.[3] The packs also present handling problems: baling hooks easily rip the bales, and those opened for purposes of display at wool sales are not readily refastened.

Experiments in Australia and in New Zealand have been made into the manufacture of woolpacks from synthetic plastic fibres.[4] At a conference held in Britain in 1968, some of the problems connected with the manufacture of these were discussed. "Plastic packs are still in the experimental stage. ... Their performance to date has been extremely promising ... (and) present indications are that any physical aspects of fabric performance, such as strength, rigidity, etc., will be

marginal and capable of fairly easy resolution. Fabric stability[5] is the only property one could foresee being a possible exception to this, although present fabrics give every indication of being adequate."[6]

The management of the Foxton company has been extremely reticent about their experiments with polypropylene, a plastic fibre shipped from Japan for trial use in the manufacture of synthetic woolpacks. It was ascertained, however, that any conversion of the existing plant to the production of plastic woolpack cloth would be easy and inexpensive. Trials on the new cloth, which have been going on for the past two years at the Foxton factory, have now been completed and the results have been sent on to the New Zealand Wool Board for further evaluation.

In January, 1969, Mr. W.E. Hale (General Manager of NewZealand Woolpack and Textiles Limited) visited Japan. His journey gave rise to considerable speculation among flax growing men, some of whom believed the business trip to be connected with proposals on the part of the Foxton firm to convert to the manufacture of plastic woolpacks.[7] In a personal communication to the writer, the New Zealand representatives of the Japanese Mitsui Company stated that the Foxton company already holds the sole New Zealand rights for the use of polypropylene. Should New Zealand Woolpack and Textiles

Limited propose to exercise its rights, the Mitsui Company representatives believed that there would be every possibility of the polypropylene yarn being manufactured in New Zealand under licence.

Until December, 1969, however, no announcement had been made by the Foxton company about its intentions, so that the future use of flax in woolpack manufacture continues to remain in the balance.[8]

The Moutoa Estate

Any decision to change to plastics for the manufacture of woolpacks would have serious implications for the Moutoa Flax Estate, the largest single source of flax green leaf for the Foxton company.

At present, there are only two firms in New Zealand manufacturing Phormium products - New Zealand Woolpack and Textiles Limited and Donaghy's Industries. The latter company, with its head office in Dunedin, has two small factories, one at Waikuku in Northern Canterbury and a second at Auckland. These factories manufacture mainly ropes and twine from the flax, while the Foxton establishment's use of flax is mainly restricted to the manufacture of woolpacks and "Brussella" floor covering.

All flax growers supplying the Foxton factory would be likely to feel the effects of any

reduction in the requirements of the company for flax fibre. If the present trend for an increase in the production of "Brussella" floor covering is maintained, this would take up some of the slack caused by any substitution of plastics for flax. At least in the short term, however, there would be a retrenchment in flax growing, unless further markets for flax fibre could be found, and, at the moment, such additional outlets are not apparent.

Already there are indications that a start has been made with the phasing out of flax production on the Moutoa Estate. As was noted in Chapter III, all flax development on the estate has ceased, and there have been quite significant reductions in the size of the work force employed there in recent years. (Table V). The only exception has been the increase in the number of cutters. Since 1965, there has been no replanting of areas in flax and, at the present annual rate of cutting, it has been estimated that without further replanting, flax supplies on the estate would be virtually exhausted within ten years.[9]

In the event of the Moutoa Estate being phased out of flax production, what would be the likely future of the 5,000-acre property? An official spokesman for the Department of Agriculture predicted that there would be a strong possibility of the government disposing of its asset.

Now that the property is secure from flooding by the Manawatu River, McArthur has suggested[10] that the land would be admirably suited to dairying. He suggested the subdivision of the estate to form thirty dairy farms, each with a potential carrying capacity of 1.5 cows to the acre and producing 450lb of butterfat per acre. In the light of recent trends in the marketing of dairy products overseas and the poor prospects for expanding their sales in the immediate future, it seems unlikely that this suggestion would receive much support today.

What other possible land uses could the Moutoa Estate be put to? Three brief farm case studies[11] are presented here, as possible pointers to the future land utilisation of the property. In making the case study selections, an attempt was made to match the farms with the Moutoa Estate on three counts: (1) they all came within the Moutoa-Opiki district; (2) they were all low-lying (within approximately the six and fifteen-foot contours) and prior to development had been swamp areas; and (3) they all had similar soil types. Unfortunately, it was impossible to find any property of comparable size to the Moutoa and approximating to the above requirements. The largest properties to be found within the low-lying parts of the Moutoa-Opiki district fell within the 300-400 acre range.

Case A was a 305-acre property situated on

the eastern margin of the Moutoa Estate. Like the latter property, the land is all low-lying and nowhere exceeds the fifteen-foot contour. It is, however, fully protected from flooding, and is used primarily for bullock fattening. In 1965, 350 dry cattle were run on the property, but wethers are also grazed when it is economic to buy them.[12]

Case B was a 113-acre property situated in a low-lying part of Opiki. It was particularly well-drained, and open drains traversed the property at two-chain intervals. For the past twenty years, the largely peaty soils, planted in potatoes, carrots, parsnips and onions, have been intensively cropped. Oats were grown in rotation with the above crops. In 1965, the yields per acre were potatoes, 9½ tons; onions, 9-10 tons; carrots, 20 tons; and parsnips, 10 tons.[13]

Case C is a well-developed 140-acre property also low-lying and situated in Opiki. The property, which has been heavily stumped in the past,[14] was used for mixed farming. In 1960, the farmer ran 450 ewes for fat lamb production and grew two crops - potatoes and rye for seed. The potatoes were planted on 25-26 acres and gave an average yield of 5 tons per acre.[15] Eleven to twelve acres were planted in rye grass and gave a yield of 30-40 bushels per acre. Areas under cultivation were regrassed every five years.[16]

If these case studies are applied to the Moutoa Estate, several lines of development seem possible. It is doubtful whether the lowest-lying reaches of the estate, say between the six and nine-foot contours, which are still susceptible to localised flooding, would be used for anything other than stock grazing. In the more elevated, drier sections of the estate - say above the nine-foot contour - there appears to be a good potential for cropping, even, perhaps, intensive market gardening. Such developments pre-suppose the need to sub-divide the property into smaller economic units, as a means of encouraging the more intensive utilisation of the available land resources.

There is, of course, always the possibility of the Moutoa Estate maintaining its present role. Recently, a machine designed to reduce the degree of fibre contamination in wool has been installed in the Foxton factory of "Woolpacks". It is hoped that the machine will reduce contamination by up to 80 per cent, but how successful it is in achieving this purpose will not be known until March, 1970, after exhaustive tests at the factory and the Department of Scientific and Industrial Research. If successful, this new innovation may yet prove to be the key to the continued production of flax woolpacks.

The Future of New Zealand Woolpack and Textiles Limited

While the future of the flax growing industry may be in some doubt, the prospects for the continued growth and expansion of New Zealand Woolpack and Textiles Limited can be viewed with optimism. The devaluation of the New Zealand currency in 1967 has given the Foxton firm a tremendous opportunity for expanding the overseas sales of its manufactured floor coverings, provided the company can hold its production costs at present (1969) levels. There has been a marked upsurge in the company's sales on the Australian market since devaluation, and its sales have been helped by the Australian and New Zealand Free Trade Agreement and by a strenuous advertising campaign.

There are, too, a number of exciting prospects open to the firm if it decides in favour of polypropylene for the manufacture of its woolpacks. It could mean that the company might be in the position to produce a more competitively priced woolpack, one which could supply the needs of the entire home market and one which may find a ready export market in Australia. If this were possible, the company would undoubtedly benefit from the advantages accruing as a result of an increased scale of production.

The plastic fibre, however, offers opportunities for the firm to diversify its production

further. At the moment, New Zealand has a tremendous market for fibre bags and sacks of all kinds,[17] which, at present, remains virtually untapped by local New Zealand manufacturers. Why should New Zealand waste its scarce overseas funds on the purchase of these commodities when it should be in the position of being able to produce for its own needs?

Any expansion of woolpack manufacturing or any diversification of production would involve the Foxton firm in an expansion of existing plant and a further capital outlay of an estimated £500,000.[18] Nor does this sum take into account the additional capital that would be required if the company undertook the manufacture of the polypropylene fibre.

A programme of change, such as that envisaged above, could have far-reaching consequences for some of the firm's employees. There would almost certainly be some redundancy among those engaged in the cutting, preparation and spinning of flax, but with retraining programmes for displaced personnel, it should be possible to redeploy this labour in other areas of the industry undergoing expansion and diversification.

Conclusion

There seems little doubt that in the years to come the firm of New Zealand Woolpack and Textiles Limited will continue to have a significant role in the

economic and social life of Foxton. Flax and Foxton have become synonymous through their long association. Although the character of the company's textile manufactures is undergoing subtle change and there is likely to be a diminution in the importance of flax for the local industry, Foxton's principal function should remain, within the foreseeable future, that of a small textile town.[19]

With the strong possibility of plastic fibres substituting for flax in the not too distant future, flax would have a diminishing role to play in the local manufacturing industry. Should the Moutoa Estate be phased out of flax production, it would appear likely that the property would be sub-divided and become the scene of more intensive forms of agriculture. Accompanying this subdivision would be a closer settlement of the area, which should be capable of supporting an additional 33 families,[20] or more, depending on the intensity of the new forms of agriculture introduced. Whether these newcomers would look towards Foxton or Shannon to supply them with their basic needs is a matter of conjecture. If it should be the former, then Foxton would benefit to the extent of increasing its importance as a service centre for the immediate district.

Throughout the history of the industry, the successful utilisation of flax has presented a challenge to the innovative powers of man. The early

Maori responded successfully to this challenge and made flax of central importance in his Stone Age economy. Who knows that, with an ever-changing technology, the modern New Zealander may yet find new uses for this once valuable resource. Therein, in the modern context, rests the greatest challenge of flax.

Footnotes

1 90 cents to $1.50.

2 World Bank Report on the New Zealand Economy, 1968.

3 'Dumping' refers to the practice of compressing wool and fastening it with wire ties before shipment. This reduces the volume of a bale by about one-third. It places a severe strain on the fabric of the pack and the main forms of pack breakdown in dumping are seam bursting and splitting of the fabric at the base of the pack.

4 In a personal communication to the writer, the Japanese manufacturers of the synthetic fibre, polypropylene, reported that the fibre had been on the market for four years. One wonders if the current dissatisfaction with the traditional-type woolpacks, a dissatisfaction which has mainly stemmed from Japan, is not a ploy to obtain markets for their plastic fibres.

5 There is some degradation when plastic packs are exposed to ultra-violet rays of the sun. Other problems encountered in the early stages of plastic pack development were bales distorting under the internal pressure of their contents and the external pressure of other bales in the stack and causing the stack to topple. Present constructions seem to have eliminated this problem.

6 See Woolpacks from Woven Plastics, 15-16, a paper presented by A.J. Farnworth and G.M. Pemberton to the Conference on Textiles from Film, 4-5 April, 1968, Manchester. A copy of this paper is held by the New Zealand Wool Board, Wellington.

7 Mr. Hale is quoted in a subsequent newspaper report as saying that he had visited Japan for an on-the-spot investigation of complaints by the Japanese Wool Spinners' Association of fibre contamination.

8 During an election address at Foxton, Mr. L.W. Gandar, Member of Parliament for Manawatu, was reported as follows:

> Mr. Gandar said the Government had no intention of phasing out woolpack manufacture in Foxton, although there was no guarantee that this would not happen.
>
> Import restrictions on jute would continue, to allow Foxton to produce 700,000 packs annually.

> He said that the New Zealand Wool Board had recommended that the production of flax packs be reduced, that the import of jute packs be increased, and that the phasing out of the flax woolpack industry be announced.
>
> The Government had not implemented these recommendations.

(Manawatu Evening Standard, November 14, 1969.)

9 J.B. Miller, in a personal communication.

10 A.I.G. McArthur 'Looking at Ourselves', N.Z.B.C., 13 June, 1966.

11 Details for these case studies were made available by the Valuation Department, Palmerston North.

12 Government valuation, 1966:
Improvements: £41,880
Unimproved: £29,920
Capital value: £71,800

13 Government valuation, 1965
Improvements: £34,580
Unimproved: £10,420
Capital value: £45,000

14 Much of the former swampland in the Moutoa-Opiki district was the site of a primeval forest. Accompanying the reclamation of the swampland, the soil shrank often exposing old stumps on the surface. The stumping operations referred to in the text involved their removal.

15 Since 1960, improved and higher yielding strains of potatoes have been developed, which helps to account for the substantially higher yields evidenced in Farm Study B.

16 Government valuation, 1965:
Improvements: £38,120
Unimproved: £12,680
Capital value: £50,800

17 These include onion bags and sacks, salt and sugar bags, potato sacks, coal sacks, and so on.

18 Mr. C. Pearce, Secretary of New Zealand Woolpack and Textiles Limited, in a personal communication.

19 Other possible functions suggested by Saunders (1969) are (a) a dormitary town; (b) a tourist town; (c) a focal point for further industry.

20 This estimate is based on the supposition that the 5,000-acre estate could be sub-divided to yield 33 land-holdings with an average size of 150-acres.

APPENDIX A:

QUESTIONNAIRE FOR EMPLOYEES OF WOOLPACK AND TEXTILES LIMITED.

1. Have you been an employee of Woolpack & Textiles for -

   (1) Less than 1 year? (4) 9-12 years? (7) 21-24 years?
   (2) 1-4 years? (5) 13-16 years? (8) 25-28 years?
   (3) 5-8 years? (6) 17-20 years? (9) 29 years or more?

2. Is your sex -

   (1) Male? (2) Female?

3. Is your race -

   (1) European? (2) Maori? (3) Other?

4. Is your age between -

   (1) 15-19 years? (2) 20-29 years? (3) 30-39 years?
   (4) 40-49 years? (5) 50-59 years? (6) 60-64 years?
   (7) 65 years or more?

5. Are you -

   (1) Single? (2) Married?

6. If married, do you have -

   (1) No children? (2) 1 child? (3) 2 children?
   (4) 3 children? (5) 4 children (6) 5 children?
   (7) 6 children? (8) 7 or more children?

7. If married and you have a family, is the number of dependent children living at home -

   (1) None? (2) One? (3) Two?
   (4) Three? (5) Four? (6) Five?
   (7) Six? (8) Seven or more?

8. If married and you have a family, is the number of children in full-time employment but still living at home -

(1) None? (2) One? (3) Two?
(4) Three? (5) Four? (6) Five?
(7) Six? (8) Seven or more?

9. What is your present job at Woolpack & Textiles?

.....

10. Did you require training or qualifications for this job?

(1) Yes. (2) No.

11. If you required training or qualifications for your job, did you get this/these -

(1) in Foxton before you were an employee of the firm?
(2) while you have been an employee of the firm?
(3) outside of Foxton?

12. Do you live within Foxton Borough at present?

(1) Yes. (2) No.

13. If you live outside Foxton Borough, where do you live?

.....

14. Have you always lived in Foxton?

(1) Yes. (2) No.

15. If you have not always lived in Foxton -

(a) where did you live before coming to Foxton?

.....

(b) did the job you have at Woolpack and Textiles bring you to Foxton?

(1) Yes. (2) No.

(c) have you lived in Foxton for -

(1) less than 1 year? (2) 1 - 4 years? (3) 5 - 8 years?
(4) 9-12 years? (5) 13 -16 years? (6) 17-20 years?
(7) 21-24 years? (8) 25-28 years? (9) 29 years or more?

16. At present, do you live in -

(1) a factory house?

(2) a factory hostel?

(3) a State house?

(4) a rented house or flat, other than a factory or State house?

(5) a house or flat owned by yourself?

(6) your parent's home?

(7) a house where you are a boarder, not living with parents?

(8) a place not listed above?

17. Do your annual gross earnings from wages or salary amount to -

(1) Less than £1000?
(2) £1000 - £1399?
(3) £1400 - £1799?
(4) £1800 - £2199?
(5) £2200 - £2599?
(6) £2600 - £2999?
(7) £3000 - £3399?
(8) £3400 - £3799?
(9) £3800 or more?

18. Is most of your shopping done in Foxton?

(1) Yes.
(2) No.

19. How often would you shop outside Foxton?

(1) Several times a week.
(2) Once a week.
(3) Once a fortnight.
(4) Once a month.
(5) Once every 2-3 months.
(6) Seldom.
(7) Never.

20. If you ever shop outside Foxton, is it because -

(1) you live outside Foxton?

(2) prices are cheaper than in Foxton?

(3) what you want is not available in Foxton?

(4) you combine your shopping expedition with some other activity?

(5) For none of the above reasons.

(6) For reasons given in Nos. 2 and 3 above.

(7) For reasons given in Nos. 2, 3 and 4 above.

21. If you ever shop outside Foxton, what are the main kind of things you would buy? (E.g. meat, furniture, hardware, etc.)

.....

.....

22. Is most of your entertainment obtained in Foxton?

(1) Yes. (2) No.

23. How often would you go outside Foxton for your entertainment?

(1) Several times a week? (2) About once a week?

(3) About once a fortnight? (4) About once a month?

(5) Seldom? (6) Never?

24. If you travel outside Foxton for entertainment, where do you go?

.....

.....

25. Do you belong to any clubs or organisations in Foxton?

(1) Yes. (2) No.

26. If so, how many different clubs or organisations do you belong to?

(1) One. (2) Two.

(3) Three. (4) Four.

(5) Five. (6) Six or more.

27. Have you ever held a responsible position (such as that of president, chairman, secretary, treasurer, club captain, coach, etc.) in any club or organisation in Foxton?

(1) Yes. (2) No.

28. Have you ever been a member of any of the following organisations in Foxton -

(1) Borough Council? (2) Chamber of Commerce?

(3) Junior Chamber of Commerce? (4) Lions Club?

(5) Rotary Club? (6) School Committee?

29. Do any other members of your family work at Woolpack and Textiles?

(1) Yes. (2) No.

30. If so,

(a) how many?

(1) One (2) Two (3) Three (4) More than three.

(b) what is the relationship?

(1) Mother. (2) Father. (3) Son. (4) Daughter.

(5) Sister. (6) Brother. (7) Wife. (8) Husband.

(9) Other.

APPENDIX B.

TABLES OF RAW DATA COLLATED FROM QUESTIONNAIRES.

(For details of the survey and sample see Chapter IV.)

TABLE XVI

MARITAL STATUS OF SAMPLE

	Male	Female
Married:	48	8
Single:	13	6

TABLE XVII

NUMBER OF CHILDREN IN FULL-TIME EMPLOYMENT BY FAMILY UNITS.

Number of Family Units	Number of children working and living at home.
36	0
14	1
2	2

TABLE XVIII

NUMBER OF EMPLOYEES WHO REQUIRED QUALIFICATIONS AND/OR TRAINING FOR THEIR PRESENT JOB.

Qualified and/or trained:	27
Unqualified/untrained:	48

TABLE XIX.

WHERE QUALIFICATIONS/SKILLS WERE OBTAINED.

(a) In Foxton before being an employee of the firm:	2
(b) While an employee of the firm:	22
(c) Other than Foxton:	3

TABLE XX.

PRESENT PLACE OF RESIDENCE.

(a) Within Foxton Borough:	48
(b) Within ½-mile of Borough:	11
(c) At Foxton Beach:	16

TABLE XXI.

DEGREE OF PERMANENCY OF RESIDENCE IN FOXTON.

(a) Always lived in Foxton:	19
(b) Not always lived in Foxton:	56

TABLE XXII.

PLACE OF RESIDENCE IMMEDIATELY PRIOR TO REMOVAL TO FOXTON.

(a)	Within 30-mile radius of Foxton:	18
(b)	Elsewhere in NewZealand:	36
(c)	From overseas:	2

TABLE XXIII.

REASON FOR COMING/RETURNING TO FOXTON.

(a)	Employment at "Woolpacks":	17
(b)	Other than employment:	39

TABLE XXIV.

ESTIMATED FREQUENCY OF SHOPPING BEYOND FOXTON.

		Employees
(a)	Several times a week:	1
(b)	Once a week:	4
(c)	Once a fortnight:	4
(d)	Once a month:	9
(e)	Once every 2-3 months:	10
(f)	Seldom:	38
(g)	Never:	9

TABLE XXV.

REASONS FOR SHOPPING BEYOND FOXTON.

(a)	Live outside of Foxton:	3
(b)	Cheaper prices elsewhere:	5
(c)	Lack of availability of requirements:	14
(d)	Combine shopping with another activity:	20
(e)	For none of the above reasons:	5
(f)	Reasons (b) and (c):	3
(g)	Reasons (b), (c) and (d):	7
(h)	Reasons (a), (b), (c) and (d):	1
(i)	Reasons (c) and (d):	8

TABLE XXVI

COMMODITIES MOST FREQUENTLY PURCHASED BEYOND FOXTON.

		Employees
(a)	Meat	7
(b)	Groceries	2
(c)	Meat and Groceries	6
(d)	Clothing	24
(e)	Footwear	2
(f)	Hardware	3
(g)	Clothing and meat	2
(h)	Furniture	10
(i)	General	10

TABLE XXVII

MEMBERSHIP OF CLUBS/ORGANISATIONS IN FOXTON.

(a)	Belong to clubs/organisations in Foxton:	35
(b)	Do not belong to any of these in Foxton:	40

TABLE XXVIII

EXTENT OF PARTICIPATION IN SOCIAL/COMMUNAL ACTIVITIES IN FOXTON.

Number of Clubs/Organisations Belonged to	Employees
1	20
2	11
3	1
5	1
6 plus	2

TABLE XXIX.

DEGREE OF LEADERSHIP SHOWN IN SOCIAL/COMMUNAL ACTIVITIES IN FOXTON.

(a)	Held responsible position in Foxton club/organisation:	29
(b)	Never held such a position:	46

TABLE XXX.

EXTENT OF MEMBERSHIP OF SELECTED ORGANISATIONS IN FOXTON.

(a)	Borough Council	1
(b)	Junior Chamber of Commerce	4
(c)	School Committee	3
(d)	Two of the above	2
(e)	Three of the above	2

TABLE XXXI.

NUMBER WITH MEMBERS OF IMMEDIATE FAMILY WORKING AT NEW ZEALAND WOOLPACK AND TEXTILES LIMITED.

(a)	Have other members of immediate family working at "Woolpacks":	44
(b)	No members of immediate family working there:	31

TABLE XXXII.

EXTENT TO WHICH MEMBERS OF IMMEDIATE FAMILY WORK FOR THE FIRM.

Number of Immediate Family Also Employed There	Sample
1	26
2	7
3	4
4 plus	7

APPENDIX C:

THE MANUFACTURE OF WOOLPACKS AND FLOOR COVERINGS AT FOXTON.

Employment in Foxton

Manufacturing in Foxton is dominated by New Zealand Woolpack and Textiles Limited and its subsidiary Bonded Felts Limited. This is clearly shown in Table XXXIII, which compares the number employed by these two firms with the total number employed in manufacturing in Foxton. In terms of the male labour force, these two firms employed 84 per cent of the total, while the comparable figure for the female labour force was 35 per cent. The only other manufacturing industries of any significance were two garment factories and a sawmill.

Output and Raw Materials

The two principal products of New Zealand Woolpack and Textiles Limited are woolpacks and floor coverings. The production of these two principal manufactures has increased steadily. (Table XXXIV). Between 1955 and 1968 woolpack production showed a doubling in output, while that for floor coverings showed nearly a 60 per cent increase.

As output has increased, there has been a corresponding rise in the raw materials used by the firm.

TABLE XXXIII.

LABOUR EMPLOYED IN MANUFACTURING INDUSTRIES IN FOXTON, 1967.

	Male	Female	Total
N.Z. Woolpack and Textiles Limited	309	64	373
Bonded Felts Limited	17	0	17
Total for Foxton	385	183	568

Sources: Department of Labour, Palmerston North, and New Zealand Woolpack and Textiles Limited.

TABLE XXXIV.

PRODUCTION OF WOOLPACKS AND FLOOR COVERINGS MANUFACTURED BY NEW ZEALAND WOOLPACK AND TEXTILES LIMITED, FOR SELECTED YEARS. (TONS.)

	1955	1960	1968
Woolpacks:	1,470	2,110	2,888
Floor coverings:	299	423	517

Source: New Zealand Woolpack and Textiles Limited.

(Table XXXV). The bulk of the firm's fibre requirements are found within New Zealand, but sisal, jute yarn and viscose rayon are imported. Sisal hemp and tow came from East Africa, spun jute yarn from Dundee (Scotland) and viscose rayon from England (Courtaulds Company). Sources of unscutched Phormium fibre are shown in Table I. (See also Fig. 2.)

Imported fibres are used mainly in floor covering manufactures, so that the increased importation of these fibres is a direct reflection of the growth of the company's production in this field.

Woolpack Manufacture

No account of New Zealand Woolpack and Textiles Limited would be complete without a description of the manufacture of woolpacks.

The first step in their manufacture is the preparation of the Phormium yarn. This involves the stripping of the green leaf at the company's flaxmill, situated beside the main Wellington-Auckland highway by the southern entrance to the town. The flaxmill, (see Fig. 6), which usually employs 20-25 men for tasks of stripping and paddocking, has a plant of six stripping machines and handles an average of 60 tons of green leaf a day. Large quantities of water (some 600,000 gallons daily) are needed, as the green leaf is pounded by the

TABLE XXXV.

RAW MATERIALS USED BY NEW ZEALAND WOOLPACK AND TEXTILES LIMITED, FOR SELECTED YEARS. (TONS).

	1950	1955	1960	1965
Phormium tenax				
Hemp	2,224	2,211	2,431	2,677
Scutched hemp	990	1,321	1,529	1,635
Tow	372	599	858	786
Stripper slips	161	210	189	452
Imported fibres				
Sisal hemp	Nil	15	326	353
Sisal tow	Nil	28	131	279
Viscose rayon	Nil	3	44	119
Jute yarn	Nil	Nil	69	128

Source: New Zealand Woolpack and Textiles Limited.

stripping machines and the extraneous vegetable matter is washed away leaving behind the flax fibre. To produce a ton of "straw" (the name applied to the flax fibre at this stage) requires from 7 to 7.5 tons of green leaf. From the flaxmill, the straw (also referred to as unscutched fibre) is removed to nearby paddocks, where it is first spread over the ground and left to bleach in the sun; subsequently it is hung over wire fences to dry. The length of time taken for this bleaching and drying process varies with the season: in summer, from four to five days; in winter, from ten to fourteen days. As a result of this seasonal variation, it is customary to stockpile supplies of unscutched fibre during the summer months.

Once the straw is thoroughly dry, it is taken to the nearby factory for "scutching". This involves the separation of the long staple fibres (called "line" fibres) from the short staple fibres (called "tow"). It requires on an average 27 cwt. of unscutched fibre to produce a ton of line fibre (also called "hemp"), 5 cwt. of tow, and the balance is waste.

The scutched fibre is then prepared for spinning. Before either the line fibre or the tow can be spun into yarn, it must first be converted into a continuous ribbon, or sliver, of parallel fibres which, in turn, must be drawn out to the correct thickness for

spinning the weight of yarn required. Since two differing classes of fibre are handled - line fibre and tow - two separate lines of machinery are needed for their preparation.

Hanks of line fibre are fed into a "Goods" machine, each hank overlapping the other, so that the fibres emerge in the form of a continuous ribbon, or sliver. At the same time, an oil emulsion is sprayed on to the sliver to soften and lubricate the fibre for subsequent machining operations. The sliver is then fed through a series of drawing frames, each frame combing and drawing out the sliver until it is sufficiently fine and even to be spun into yarn. The yarn is then wound from spinner bobbins on to 10lb rolls, which are placed in the creel of a beaming machine. Each of the 320 threads from the creel passes through a stop motion on the way to the winding head of the beamer, which makes a beam, or large spool, of over 900lbs weight. These are fitted to the back of the looms to supply the warp yarn of the cloth.

The treatment of the short tow fibres is similar to that described above for line fibre, except that carding machines are used instead of "Goods" machines, and the drawing frames are rather smaller to suit the shorter fibre length. The resultant spun yarn is then wound on 10-lb cones, which are ready to place on the looms to supply the weft.

The woolpack looms are of a modern shuttle-less design, stopping automatically for any fault and requiring the minimum of attention.

From the looms, rolls of woven woolpack cloth are passed through a large mangle to produce a smoother and more dense cloth. This cloth is then cut to the required sizes, before passing to the Sewing Department for assembly.

Finally, each pack is examined for sewing or weaving faults, and a loose top is placed with each pack before it is sent to the press, where fifty packs are baled together and are sent to the store to await despatch.

Floor Covering Manufactures

Undoubtedly, the most significant development for the company over the last decade and a half has been the expansion and diversification of its floor covering manufactures. The company now produces four types, three of which can be used for either wall-to-wall carpeting or matting. Marketed under the brand names of "Cordella", "Brussella", "Gayleen" and "Duramat", only "Brussella" has any quantity of Phormium fibre used in its manufacture.

Sisal, an imported hard fibre, is used in

the manufacture of "Cordella", while viscose rayon, another imported fibre, is used in the manufacture of "Gayleen" and small quantities (15 per cent) are used in the manufacture of "Brussella". "Duramat", the fourth floor-covering, is manufactured in New Zealand under licence and is produced from extruded P.V.C. tubing and high density polyethylene.

"Duramat", the last developed of the company's range of floor covering products, is a waterproof matting. First marketed towards the end of 1968, the company's management holds out high hopes for sales on the home market and possibly overseas.

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