A

COMPARATIVE

study of the

ECONOMICS

of the

WOOLLEN INDUSTRY

of

SCOTLAND

and the

PANJAB.

Thesis presented for the degree of

Ph.D.

Degree conferred -
22nd October, 1927.
ELEVATION
SCOTLAND
500 - 1000
1000 - 4000
IN FEET.
These are the gifts of art, and art thrives most
Where commerce has enriched the busy coast;
He catches all improvements in his flight,
Spreads foreign wonders in his country's sight
Imports what others have invented well,
And stirs his own to match them or excel,
Ties this reciprocating each with each
Alternately the nations learn and teach.

Cowper.
CONTENTS.

INTRODUCTION. Page .. 1

Ch 1 The Material. .. 11

Ch 2 The Marketing Distribution and Organisation of the Industry. .. 45

Ch 3 The Cottage Industry. .. 84

Ch 4 Labour in Scotland .. 123

Ch 5 Labour in the Panjab .. 166
CONTENTS

INTRODUCTION. Page .. 1

Ch 1 The Material. .. 11

Ch 2 The Marketing Distribution and Organisation of the Industry. .. 45

Ch 3 The Cottage Industry. .. 84

Ch 4 Labour in Scotland .. 123

Ch 5 Labour in the Panjab .. 166
BOOKS REFERRED TO:

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**LIST OF ILLUSTRATIONS**

**Photographs.**

1. Shearing. Mozang, Lahore. ... 32
2. The Penja at Work. Lahore. ... 92
3. Spinning in the Himalayas, with the dherna. ... 94
4. Girls Spinning. Lahore. ... 95
5. Spinning in the Hebrides. ... 96
6. Weaving in the Panjab. ... 98
7. Carpet Weavers at Work. Amritsar. ... 103
8. The Shanty. Hebrides. ... 160
9. A Typical Mill on the Banks of the Allan. ... 144
10. Carpet Weavers at Meals. Amritsar. ... 186

**Sketches.**

1. Shears. ... 33
2. The Penja at Work. ... 92
3. Different forms of the Dherna. ... 93
4. Spinning Wheel. ... 96

**Maps.**

1. Scotland.
2. The Panjab.
3. Scotland Sheep Distribution in 1925. ... 19
4. Scotland Sheep Distribution in 1800. ... 20
5. Panjab Sheep Distribution. ... 24
6. Scotland, Geographical Distribution (two maps) ... 132, 133

**Graphs.**

1. Distribution of population among the industries, 1921. Scotland ... 125
2. Same at different ages in the woollen industry. ... 135
3. Same among the textiles. Same in the woollen industry. ... 127, 129
4. Distribution of population among industries in Panjab, 1921. ... 168
INTRODUCTION.

1. Subject. ........ 1
2. Location and Scope of Study. .... 2
3. The Sources of Information. .... 7
4. Procedure. ........ 10
INTRODUCTION.

SUBJECT.

The subject of this Thesis is the comparison of economic conditions prevailing in the woollen industry in Scotland and the Panjab. The cottage industry has been dealt with in greater detail throughout the Thesis, as it holds such an important position in the industrial economy of the Panjab. Also though at present it employs such a small proportion of Scotch labour and the various operations in the manufacture of woollens are more of historical interest, there is a decided tendency towards the encouragement of cottage industries. The factory industry though so important in the Scottish industrial economy has received only secondary attention (where it bears on the cottage industry) in the Thesis.
LOCATION AND SCOPE OF STUDY.

Two particular AREAS -- the Panj ab and Scotland -- have been selected for the research. Scotland is a part of northern Britain, in the temperate zone, lying between 60° 51' and 54° 38' north latitude, and 1° 45' and 6° 14' west longitude. It has an area of 30,405 square miles, supporting a population of 4,882,497 persons, i.e. about 160 to the square mile. The Panj ab too is a temperate region, in the north of India, extending between 27° 39' and 34° 2' south to north, and 69° 23' to 79° 2' west to east. It covers an area of 133,741 square miles (including 36,533 square miles of Feudatory States), which is greater than the total area of Great Britain and Ireland combined -- 121,000 square miles. The population of the Province is 25,101,060 persons, i.e. 187 per square mile.

At first sight this may seem rather a strange choice for a comparative study, but my being a native of one place and a student in the other, gives me, I hope, a sufficient insight into the manners and customs of the two places for such an undertaking. Besides, on deeper reflection I am convinced that there are adequate grounds to justify such an attempt at an analytic study of the general trend and development of economic tendencies, in the same industry, but in different localities, and under dissimilar conditions.

In respect of SURROUNDINGS the two localities present an absolute contrast. Scotland is bounded on three sides by the sea, and on the south by England. Thus the much indented coast line, with
its many harbours, gives her a very favourable position as regards commerce by sea, owing to the easy accessibility to world markets. The Panjab on the other hand, is surrounded on all sides by land. The Himalayas in the north make a natural defence of great strategic value, while the passes or gateways called 'darras' (जाल), give to the Panjab a very favourable and central situation for land commerce between Central Asia and India.

As regards the RELIEF the two areas are very similar. Scotland may be divided into three natural regions. The Southern Uplands with their rich pastures, at an altitude of from 600 to 1,500 feet above the sea level. Next come the Central Lowlands, which on the average do not rise beyond 600 feet above sea level, and offer great facilities for manufactures. Lastly, the Northern Highlands rising from 1,500 to 3,000 feet above sea level, which owing to their valuable pastures for sheep grazing, give to Scotland an important position as a wool producing area. Similarly, the Panjab naturally divides itself into three distinct areas. The Southern River Plains about 600 feet above sea level, offer an advantageous position for the erection of factories. Then the Southern Slopes of the Himalayas, which rise from 3,000 to 6,000 feet above sea level, possess pastures and grazing grounds of the best quality, thus giving to the Panjab latent potentialities for a great expansion of the wool producing industry. Finally, the high ranges of the Himalayas in the north, towering from 6,000 to 18,000 feet above sea level are the indigenous home of the sheep with the finest wool.
The climate of Scotland is severely cold in winter, and mild in summer, but the Punjab goes to extremes of heat in summer and cold in winter. The point of interest is that in both localities, the inclination of the weather and the severe winter cold, have made the wearing of warm clothing an absolute necessity. This gives to both countries a natural advantage in skill in the manufacture of woollens, and the momentum of an early start over the neighbouring countries, besides providing each with highland pastures for wool growing.

The very names of the countries show their characteristics. Scotland is the land of the Scots — the people have made the land what it is. The Punjab (panj — five, ab — waters) is the land of the five rivers — here natural conditions have had greater influence on the history of the people.

The general character of both peoples is quick, fiery, and impulsive. The Punjab tribes on the Frontier with their wars, and the Scotch clans on the Borders with their family feuds, have much in common. But where industry is concerned, the economic environment has affected the two people differently. The niggardliness of nature has made the Scotsman thrifty, hard-working, and successful; but the bounty of nature has made the Punjabis (who is of the purest Aryan blood in India) lazy, indolent and unwilling to work. Wealth in Scotland is the result of a continuous struggle to practise thrift, and to save. The land was never so fertile as it exists at present, being one might say, almost entirely the work of man. Even at the present time, during early spring, I have seen
the natives of the Hebrides actually carrying up in baskets from the shore, practically the whole of the soil for their little plots on the rocks for sowing the summer crops. On the other hand, land in the Panjab is so fertile, that a mere scratching of the top layer yields sufficient for immediate requirements; thus there is not so much need of thrift and saving. Until recently with a plentiful supply of agricultural land in the Province, rainfall was the chief factor influencing the growth and distribution of population, and in consequence, the size of holdings, the number of cattle, the extent of tenancy, and the industry of the Panjab. Even the official budget has been termed "a gamble in rain". But conditions now are altering fast, and the forces of nature are being harnessed to the service of man. The construction of irrigation works has already made 56% of the land under cultivation independent of the monsoons -- there is a larger area of irrigated land in the Panjab than in any other Province in India.

HISTORICALLY we can gather industrial facts regarding the Panjab as far back as 2,000 B.C., but for Scotland there is no definite data for the period before the Roman conquest of the first century. Since then the evolution of industry in Scotland has been fairly steady and progressive. We can trace an unbroken history from the family and handicrafts stage, through the domestic, right on to the prevailing factory system. Although even now, there are a few

7. 'Economic Conditions in India' by P.P. Pillai, page 35

"The ordinary Indian plough ...... does little more than scarify the ground".
instances of some of the outlying parts, like the Hebrides and the Islands of Orkney and Shetland being still chiefly engaged in cottage industries. But Scotland as a whole is an industrial country in the modern sense of the word. Though her manufactures and factory conditions have been dealt with in greater detail in this investigation.

The Panjab having reached a high stage of progress, long before the Britons were even civilised, has since been marking time right up to the end of the nineteenth century. At the present time she presents a strange contrast and mixture of the modern and medieval. Villages from time immemorial still at the family and handicrafts stage, working with the distaff and the spinning wheel, side by side with modern towns and steam and electrically driven factories. The first century means of communication -- the mule driven ekka and the ox driven waggon -- are vying with the swiftest motor car, and the lightest aeroplane of the twentieth century. Some descriptions in the Old Testament still apply to certain tracts, and yet there are areas which might be described as ultra-modern. The change started about fifty years ago, and progress has been sure and swift. In the proximity of the cities at any rate, Panjab life for the most part is a new picture in an old setting. Fortunately that frame is a rich one, made mellow and picturesque with the age of centuries of civilisation, history, and tradition as a background.

It was impossible to confine the study exclusively to the Panjab and Scotland, as both areas though different in size, are integral parts of larger units -- India and Britain -- bearing a similar
relationship to these greater units. So much so, that many of the customs, laws, enactments, and descriptions refer to the larger unit as a whole, and indirectly to the individual sections. Hence, the impossibility of obtaining an analysis of the statistics, as apart from those published for the whole, has in certain cases compelled me to speak of Britain and India rather than of Scotland and the Panjab.

I have tried as far as possible, to compare the two areas side by side, but in sections where there were too many figures and statistics, I have dealt with each country separately so as to avoid confusion. The comparison is not at any one particular date, but of the general trend of broad economic tendencies. Wherever possible the latest statistics obtainable have been utilised. In many cases, however, the necessity of a common basis for complete and general information has obliged me to work on the figures of the latest Census Reports (1921), instead of the latest annual returns. A detailed comparison was out of the question, as it is impossible to obtain exact facts regarding human distribution. Moreover, the standards of value, the monetary systems, and even the customs and habits of the two countries, are so entirely different, that they render such an attempt futile.

THE SOURCES OF INFORMATION

The main sources tapped in the making of this survey may be summed up as -- literature, personal visits, and questionnaires.

LITERATURE is especially helpful for the historic
sections. It is surprising that while a voluminous literature is procurable, regarding the economics of the cotton and other industries, comparatively little is available for the woollen industry, for either Scotland or the Panjab.

In the case of Scotland and references in the Statistical Accounts, the Public General Statutes, and the Acts of Parliament, combined with accounts of travels etc, give sufficient material to construct a reliable historical superstructure. For comparatively modern facts the Census Reports, and a few other books which have been mentioned in detail at the beginning, have been consulted. All this literature is absolutely essential for any compilation; we depend entirely on it for the historical construction, as the prevailing factory system has completely swept away all the old methods of work and economy in all but a few remote places.

The material hitherto available regarding the woollen industry of the Panjab is scattered in various indirect statements in the literature of the country. Besides a few pamphlets by D. J. Johnstone, Deputy Commissioner for the Panjab in 1884 (the industry then consisting only of the cottage industry), and a chapter on the subject in Latifi’s "Industrial Panjab" written in 1911, there are a few chapters in other books which deal with India as a whole. Fortunately lack of material in this case has not proved a very great obstacle, as the present industrial organisation

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General Report of Scotland, by J. Sinclair. 5 volumes, 1814.

The Statistical Account of Scotland. 1846. 15 volumes.
prevailing over the greater part of the Province has from time immemorial been in vogue, unchanged and unaltered to such an extent, that even today references to the industry in the ancient literature of the country are actually illustrated.

Secondly, PERSONAL VISITS have greatly contributed towards a true understanding of the industrial situation and the conditions of labour. I have visited the principal centres of the woollen trade and industry, in order personally to study the prevailing conditions both in the Punjab and in Scotland (1923-24).

For the factory industry in the Punjab, I have visited the woollen mills at Dhariwal, Amritsar, and Chheharta; and the various carpet factories at Amritsar, Lahore, Gujranwala etc. In Scotland, I have visited the woollen mills on the Borders -- Galashiels, Selkirk, and Hawick --, at Edinburgh, Aberdeen, and Alva; the worsted mills at Alva, Dunblane, and Ayr; the carpet factories at Glasgow and Edinburgh; and a few dye works.

As regards the cottage industry, I have made a study of it in the Punjab, in the Simla Hills, Dalhousie Hills, and various villages in the plains. In Scotland, I had to make a special tour of the north of Scotland, and the Western Islands (Hebrides) -- Lewis and Harris -- in order to have a practicable working basis for the comparative study. This stage of the investigation entailed considerable expense of time and labour, as the work is carried on in scattered cottages in out-of-the-way places.

Thirdly, I must acknowledge, that for some of
my information on important matters, I am indebted to reliable sources, official and nonofficial, for facts which have never yet appeared in printed form. Most valuable information has also been collected by means of private conversations and questionnaires.

PROCEDURE.

A separate study of the two areas -- Scotland and the Panjab -- with a coordinating concluding chapter, though logically more feasible, meant too much repetition and also destroyed the idea of a comparative investigation. Hence, wherever possible I have tried to work up the sections for each country side by side. The statistical portions and the chapters on labour, however, necessitated separate treatment, as otherwise they would have involved too much confusion.

The first chapter suggests a few improvements and deals with the material, its uses, and possibilities of development. The second is historic and statistical treating the organisation of the industry, and the problems of marketing, showing how in two such widely differing areas the trend of industrial development has passed through the same stages. The third chapter is devoted entirely to the cottage industry illustrating the methods of manufacture and giving an account of the state of the industry. Chapters four and five deal with the economic and statistical aspects of labour.
CHAPTER ONE.

THE MATERIAL.

1. The Value of Sheep's Products and Bye Products . . 11

2. Sheep Stocks and Distribution of the Industry . . 15

3. Pasturage and Size of Flocks . . 26

4. Shearing . . 31

5. Sheep Breeding and the Quality of the Wool . . 36
I. THE VALUE OF SHEEP: PRODUCTS AND BYE PRODUCTS.

For the sake of convenience, and in order to avoid confusion, I have, in this investigation, dealt only with those wool and hair fibres of animals, which, owing to their felting property, are subjected to the process of cloth manufacture, in the modern world, and which, for practical purposes, are referred to as "wool" in this thesis. Accordingly, I have confined myself mainly to the woollen, and, incidentally, to the fur and hair industries. For it is not easy to draw a hard and fast line of distinction between fur, wool, and hair, as each one, though distinct, shades imperceptibly into the other. Alpaca and Kashmir wools (the yield of goats), wool proper (the fleece of sheep), camel hair, and rabbit fur are all utilised in the manufacture of woollen cloth.

Wool is generally the fleecy yield of sheep. The goat (a species of the same genus) yields both wool and hair, e.g., the Kashmir goat of India, the Alpaca goat of South America, and the Shetland sheep of Scotland.

The sheep is a very valuable animal, and yields products and bye products of high economic utility. It has always been prized not only for its fleece and its flesh, but because, dead or alive, it can be put to many excellent uses. Economy has been carried to such a degree that now it is possible so to utilise the lambs, that nothing is lost but the bleat.

The fleece and the flesh are the two most valuable products. Breeding, in Scotland, is a scientific laboratory study, greatly assisting the farmer by means of experiments at breeding and crossing. Cheviot sheep are bred principally for their mutton, and Blackface for their wool. In the Panjāb recently, more and more attention is being paid to this line of work, and besides private individual
discoveries, experiments are carried out at the Cattle Farm at Hissar in cross breeding the local sheep with imported Australian Merinos, with successful results, showing an improvement in mutton and wool, both in quantity and quality.

Sheep hair is sometimes cured on the skin, and made into coats, capes, etc. In Peshawar, and the North Western Frontier Provinces, 'pasham choghas' or 'postins' (fur coats), are in general use during the cold weather. They are made of Persian pelts, and the hair, though not soft, is silky, curly, warm and effective.

Sheep hides are cured into valuable leather, and used for making shoes, gloves, bags, bindings of books, etc. as well as for water and flour bags in the Panjab and in all eastern countries. Kid leather is soft, elastic, and durable, and fetches a good price.

Sheep's milk, being too strongly flavoured, is not generally used, except in a few places in the East. Besides its medicinal value, it is very rich, and contains a large proportion of fat—6% fat as compared with 4% in cows milk. The connection between the milk and the fleece is very close. The heavier the fleece the greater the strain on the animal and the poorer the milk—the milk of the Angora and Kashmir goats is hardly ever used for drinking; the shorter the fleece the smaller the drain on nourishment, and the richer the milk. The goats in the plains of the Panjab are an example of this fact. In the plains of the Panjab, goats are reared mainly for their milk and butter. The milk is medically recommended for babies as being the nearest in quality to the mother's milk. Moreover, the upkeep of the animal costs next to nothing, and that is why it has been called the "poor man's cow". In Scotland, most of the village farmers keep a few goats for milk; but as a

commercial enterprise this branch of industry is only just beginning to receive attention.

Sheep, in Scotland, are not used as BEASTS of BURDEN, but in the hilly and rocky parts of India, especially in the Panjaban and the rough and steep mountainous regions of the north, they are highly valued in this respect. As mentioned in Baden Powell's Handbook of the Economic Products of the Panjaban--The mountain paths between Spiti and Rampur are so precipitous that sheep, more sure footed than larger beasts, are commonly used to carry burdens of from 16 to 20 seers (32 to 40 lbs).

Sheep MANURE is a valuable fertiliser of land, being chemically richer in nitrogen, phosphoric acid, and potash than that of any other animal. In the Panjaban it is the custom in some parts, for well owners and farmers, to offer free grazing for the night to owners of sheep flocks, so as to enrich their land with the manure. Usually the payment is one rupee per night for a herd of a hundred sheep. At times, no regular payment is made, but the safety of the flock is guaranteed, with other privileges of grazing, cutting branches off trees, and a night's lodging, besides free food and tobacco for the herdsmen. Usually the folding of two thousand goats or sheep on an acre of land, for one night, gives the necessary amount of manure dressing. This is a common practice in Kangra, Hoshiarpur, Montgomery, and Sialkot.

The sheep is a valuable animal. It yields a double harvest of mutton and wool; while its hair, hides, milk, and manure are all utilised. Even the horns of the sheep are carried by mendicants to receive alms, besides being cured

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2. Information from personal knowledge and talks with various villagers in the different districts. 1923-24.
for decorative purposes, or being made into trumpeting horns, Until recently, sheep used to be bred for show fighting, so that crossing often aimed at heavy horns and powerful hind quarters.

The sheep is also a farm utiliser, which enriches both the farm and the farmer. Besides fertilising the soil, the farmer can utilise the cheaper grains, root crops, food grains, and waste vegetation to the best advantage as fodder for his flock. The old English adage "no grass, no cattle; no cattle, no manure; no manure, no grass" is true everywhere.

So valuable an animal certainly deserves careful consideration; but it must be remembered that it can efficiently be utilised only for one purpose at a time. The problem of breeding, therefore, requires study, attention, and careful specialised treatment.
### SCOTLAND

#### SHEEP STOCKS: Table of Statistics

<table>
<thead>
<tr>
<th>Year</th>
<th>Scotland Sheep</th>
<th>Scotland Cattle</th>
<th>England and Wales Sheep</th>
<th>England and Wales Cattle</th>
</tr>
</thead>
<tbody>
<tr>
<td>1800</td>
<td>2,851,867</td>
<td>1,047,142</td>
<td>12,500,000</td>
<td>2,000,000</td>
</tr>
<tr>
<td>1855</td>
<td>5,660,000</td>
<td>975,000</td>
<td>18,690,000</td>
<td>3,502,000</td>
</tr>
<tr>
<td>1868</td>
<td>7,112,112</td>
<td>1,050,917</td>
<td>23,599,234</td>
<td>4,373,064</td>
</tr>
<tr>
<td>1891</td>
<td>7,623,900</td>
<td>1,223,297</td>
<td>21,108,658</td>
<td>5,629,524</td>
</tr>
<tr>
<td>1910</td>
<td>7,144,646</td>
<td>1,170,759</td>
<td>19,958,299</td>
<td>5,866,568</td>
</tr>
<tr>
<td>1913</td>
<td>6,801,126</td>
<td>1,246,910</td>
<td>17,122,123</td>
<td>5,716,944</td>
</tr>
<tr>
<td>1920</td>
<td>6,910,039</td>
<td>1,229,637</td>
<td>13,333,562</td>
<td>5,482,880</td>
</tr>
<tr>
<td>1924</td>
<td>6,886,152</td>
<td>1,164,397</td>
<td>14,945,195</td>
<td>5,894,329</td>
</tr>
</tbody>
</table>

The number at PRESENT estimated is about seven million sheep for Scotland; whereas there are only a little over a million head of cattle. Thus the proportion of sheep to cattle is as 6:1. A historical study of the live stock statistics brings out the fact that, the number of sheep has increased from three million in 1800 to six million in 1850, since when it has been fluctuating between six and seven million; but the number of cattle has remained fairly steady round about a million. Thus during the last century, there has been an increase of from 2½ to 6 sheep to every head of cattle.

A COMPARISON of the relative numbers of sheep and cattle in Scotland, with those in England and Wales, brings out the rather surprising fact that, whereas in Scotland there are almost six sheep to every head of cattle, in England and Wales the proportion is only

2. 1855: Statistics of Scotland, Section dealing with Agriculture.
about two and a half now, which about 1600 was nine sheep to every head of cattle. In England as in Scotland, when greater attention was devoted to wool raising during the early part of the nineteenth century (owing to the protective policy of the nation), sheep stocks increased from 18 million in 1800 to 23½ million in 1868. Once the protective tariffs were removed, it was not found as paying to devote so much attention to the industry, and the numbers steadily declined from 33½ to 13 million in 1920. Further analysis shows that this decline is noticeable only in the western manufacturing counties; in the eastern counties, flying stock is kept; while in the hill farms and in the area north of the River the number of sheep has remained fairly steady.

The above facts lead to certain general CONCLUSIONS. The high specific value of wool, enables the grazing industry to thrive on rough lands at great distances from the market. Thus Scotland possessing a good deal of this type of land -- in the proportion of 2 arable : 1 pasture : 7 rough grazing,2 -- favours the sheep raising industry. The very fact of the increase from three to seven million in one century is sufficient proof of this statement. Hence, this movement of industry, gives place to the production of perishable commodities, or products of lower specific value near the markets and on lands suited to field crops. Because with the growth of population, and the increase of industrialism,

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6. Flying stock is purchased for the meat market, and sold off as soon as fattened.

Proportions deduced from Table of Statistics in the Appendix.
it is more economical to have cows nearer the markets, than sheep, these markets, the large manufacturing towns, requiring supplies of good milk and beef at hand, consequently the decline in the numbers of sheep in England from 23½ to 13 million during the last fifty years, and the increase in the number of cattle from 2 to 6 million in a century. The same tendency is observable in America, where wool production has found its way to the Rocky Mountains, giving place to dairy farming round the New York industrial and densely populated area.

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GEOGRAPHICAL DISTRIBUTION OF THE INDUSTRY:

Scotland naturally divides itself into three areas of distribution according to configuration of the land. A study of the annexed table (page 18), gives further proof of the above general tendencies. The areas of densest sheep population are round the Cheviots and the Southern Uplands, grazing from 800 to 1400 sheep on every 1000 acres of land -- Roxburgh, 1324; Berwick, 1221; and Selkirk, 1107 -- and having the densest sheep population in the world. These sheep are mainly of the Cheviot breed, and number well nigh two million. Next in density are the fertile lowlands, where flying stock is largely kept for the meat supply of the industrial areas, and considerable attention is directed to breeding with a view to early maturity and small bones. The density of this central area is between three and five hundred sheep to a thousand acres of land. Lastly, in the Northern Highlands, there are from 160 to 300 sheep per 1000 acres, mainly of the blackface hardy breed, which thrives under conditions impossible for the rearing of any other kind of stock.
<table>
<thead>
<tr>
<th>COUNTY</th>
<th>AREA in acres</th>
<th>SHEEP in 1879</th>
<th>PER 1000 ACRES</th>
<th>SHEEP in 1925</th>
<th>PER 1000 ACRES</th>
<th>CATTLE 1925</th>
<th>PER 1000 ACRES</th>
<th>POPULATION 1921</th>
<th>PER 1000 ACRES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aberdeen</td>
<td>1,861,582</td>
<td>100,000</td>
<td>79</td>
<td>224,795</td>
<td>202</td>
<td>174,109</td>
<td>138</td>
<td>301,016</td>
<td>239</td>
</tr>
<tr>
<td>Argyll</td>
<td>1,990,472</td>
<td>276,450</td>
<td>140</td>
<td>716,098</td>
<td>360</td>
<td>52,977</td>
<td>27</td>
<td>75,862</td>
<td>39</td>
</tr>
<tr>
<td>Ayr</td>
<td>793,600</td>
<td>313,250</td>
<td>395</td>
<td>364,838</td>
<td>460</td>
<td>106,762</td>
<td>135</td>
<td>299,273</td>
<td>413</td>
</tr>
<tr>
<td>Berwick</td>
<td>410,112</td>
<td>58,200</td>
<td>142</td>
<td>74,016</td>
<td>181</td>
<td>43,627</td>
<td>106</td>
<td>57,298</td>
<td>142</td>
</tr>
<tr>
<td>Clackmannan</td>
<td>294,805</td>
<td>133,824</td>
<td>454</td>
<td>360,261</td>
<td>1,221</td>
<td>23,941</td>
<td>81</td>
<td>28,246</td>
<td>97</td>
</tr>
<tr>
<td>Clackmannan</td>
<td>139,432</td>
<td>12,745</td>
<td>29</td>
<td>39,212</td>
<td>222</td>
<td>8,796</td>
<td>64</td>
<td>32,711</td>
<td>241</td>
</tr>
<tr>
<td>Clackmannan</td>
<td>448,066</td>
<td>12,745</td>
<td>29</td>
<td>182,122</td>
<td>340</td>
<td>19,809</td>
<td>44</td>
<td>28,246</td>
<td>97</td>
</tr>
<tr>
<td>Clackmannan</td>
<td>30,477</td>
<td>8,000</td>
<td>266</td>
<td>12,852</td>
<td>426</td>
<td>3,398</td>
<td>110</td>
<td>32,542</td>
<td>932</td>
</tr>
<tr>
<td>Clackmannan</td>
<td>680,217</td>
<td>200,000</td>
<td>294</td>
<td>548,690</td>
<td>807</td>
<td>66,528</td>
<td>101</td>
<td>75,370</td>
<td>110</td>
</tr>
<tr>
<td>Clackmannan</td>
<td>157,829</td>
<td>22,000</td>
<td>178</td>
<td>66,620</td>
<td>424</td>
<td>13,256</td>
<td>83</td>
<td>150,861</td>
<td>961</td>
</tr>
<tr>
<td>Clackmannan</td>
<td>179,142</td>
<td>42,250</td>
<td>230</td>
<td>151,461</td>
<td>846</td>
<td>15,256</td>
<td>95</td>
<td>47,487</td>
<td>278</td>
</tr>
<tr>
<td>Clackmannan</td>
<td>304,606</td>
<td>36,880</td>
<td>121</td>
<td>51,941</td>
<td>170</td>
<td>24,305</td>
<td>79</td>
<td>41,558</td>
<td>136</td>
</tr>
<tr>
<td>Clackmannan</td>
<td>314,952</td>
<td>22,000</td>
<td>79</td>
<td>125,300</td>
<td>398</td>
<td>45,398</td>
<td>144</td>
<td>292,959</td>
<td>907</td>
</tr>
<tr>
<td>Clackmannan</td>
<td>550,136</td>
<td>60,000</td>
<td>107</td>
<td>189,267</td>
<td>338</td>
<td>48,917</td>
<td>89</td>
<td>271,052</td>
<td>485</td>
</tr>
<tr>
<td>Clackmannan</td>
<td>2,616,545</td>
<td>50,000</td>
<td>2</td>
<td>507,687</td>
<td>194</td>
<td>46,050</td>
<td>17</td>
<td>82,459</td>
<td>31</td>
</tr>
<tr>
<td>Clackmannan</td>
<td>245,347</td>
<td>24,957</td>
<td>102</td>
<td>61,201</td>
<td>260</td>
<td>26,559</td>
<td>108</td>
<td>41,779</td>
<td>171</td>
</tr>
<tr>
<td>Clackmannan</td>
<td>46,487</td>
<td>6,100</td>
<td>132</td>
<td>32,394</td>
<td>704</td>
<td>6,378</td>
<td>139</td>
<td>7,963</td>
<td>152</td>
</tr>
<tr>
<td>Clackmannan</td>
<td>885,336</td>
<td>204,260</td>
<td>224</td>
<td>507,927</td>
<td>574</td>
<td>115,445</td>
<td>130</td>
<td>97,928</td>
<td>62</td>
</tr>
<tr>
<td>Clackmannan</td>
<td>552,821</td>
<td>122,000</td>
<td>217</td>
<td>236,554</td>
<td>423</td>
<td>70,798</td>
<td>126</td>
<td>1,539,412</td>
<td>2,727</td>
</tr>
<tr>
<td>Clackmannan</td>
<td>231,724</td>
<td>70,000</td>
<td>310</td>
<td>178,929</td>
<td>771</td>
<td>17,864</td>
<td>77</td>
<td>506,377</td>
<td>2,161</td>
</tr>
<tr>
<td>Clackmannan</td>
<td>124,968</td>
<td>12,000</td>
<td>48</td>
<td>15,561</td>
<td>124</td>
<td>6,542</td>
<td>45</td>
<td>8,790</td>
<td>94</td>
</tr>
<tr>
<td>Clackmannan</td>
<td>124,968</td>
<td>12,000</td>
<td>48</td>
<td>161,436</td>
<td>306</td>
<td>41,691</td>
<td>70</td>
<td>49,631</td>
<td>86</td>
</tr>
<tr>
<td>Clackmannan</td>
<td>593,365</td>
<td>108,000</td>
<td>182</td>
<td>205,610</td>
<td>907</td>
<td>7,355</td>
<td>32</td>
<td>15,322</td>
<td>69</td>
</tr>
<tr>
<td>Clackmannan</td>
<td>226,899</td>
<td>112,600</td>
<td>497</td>
<td>627,799</td>
<td>388</td>
<td>67,714</td>
<td>41</td>
<td>125,903</td>
<td>79</td>
</tr>
<tr>
<td>Clackmannan</td>
<td>1,617,608</td>
<td>222,000</td>
<td>136</td>
<td>38,714</td>
<td>246</td>
<td>25,628</td>
<td>163</td>
<td>298,904</td>
<td>1,974</td>
</tr>
<tr>
<td>Clackmannan</td>
<td>155,785</td>
<td>10,000</td>
<td>63</td>
<td>231,246</td>
<td>148</td>
<td>40,435</td>
<td>21</td>
<td>70,618</td>
<td>36</td>
</tr>
<tr>
<td>Clackmannan</td>
<td>1,970,004</td>
<td>154,946</td>
<td>78</td>
<td>564,355</td>
<td>1,324</td>
<td>24,289</td>
<td>52</td>
<td>44,989</td>
<td>106</td>
</tr>
<tr>
<td>Clackmannan</td>
<td>426,566</td>
<td>266,370</td>
<td>625</td>
<td>120,686</td>
<td>422</td>
<td>33,198</td>
<td>118</td>
<td>22,607</td>
<td>132</td>
</tr>
<tr>
<td>Clackmannan</td>
<td>3,549</td>
<td>102</td>
<td>547</td>
<td>191,497</td>
<td>1,117</td>
<td>3,962</td>
<td>23</td>
<td>161,719</td>
<td>560</td>
</tr>
<tr>
<td>Clackmannan</td>
<td>37,977</td>
<td>29</td>
<td>97</td>
<td>120,686</td>
<td>422</td>
<td>33,198</td>
<td>118</td>
<td>22,607</td>
<td>132</td>
</tr>
<tr>
<td>Clackmannan</td>
<td>1,297,949</td>
<td>27,130</td>
<td>28</td>
<td>203,922</td>
<td>157</td>
<td>9,766</td>
<td>8</td>
<td>17,802</td>
<td>14</td>
</tr>
<tr>
<td>Clackmannan</td>
<td>76,807</td>
<td>3,633</td>
<td>47</td>
<td>20,735</td>
<td>270</td>
<td>11,754</td>
<td>162</td>
<td>83,268</td>
<td>1,092</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>19,059,662</strong></td>
<td><strong>2,851,867</strong></td>
<td></td>
<td><strong>7,118,820</strong></td>
<td></td>
<td><strong>1,204,792</strong></td>
<td></td>
<td><strong>4,882,497</strong></td>
<td></td>
</tr>
</tbody>
</table>
1925 Sheep Distribution

SCOTLAND

Per 1000 acres
Below 150
150 - 300
300 - 500
500 - 800
Over 800

[Ref: Page 18 - Columns 4 & 5]
Historically, Scotland has made a great advance as a sheep raising country, the numbers having risen from 3 million to 7 million — an average of from 199 to 477 sheep per 1000 acres — during the last century. In 1800, the whole of the Northern Highland area there were from 2 sheep in Inverness to 140 in Argyll, now every county in this area grazes from 150 to 300 sheep on every 1000 acres. The fertile uplands on the Borders of the Cheviot Hills (Ayr, Berwick, Peebles, Roxburgh, and Selkirk) possessed the greatest proportion of sheep, while the very high districts on the Cheviots came next; now all the districts in this area are above the average of 477, possessing from 500 to 1400 sheep to every 1000 acres of land.

In the densely populated industrial areas, and in their neighbourhood on the fertile lowlands, cows for milk are more valuable than sheep. Thus the following industrial areas possess the greatest density of cattle per 1000 acres: — Ayr - 135; Lanark - 126; Stirling - 118; Aberdeen - 138; Renfrew (Clyde area) - 163. In the areas round the industrial districts and on the fertile lands, cattle are preferred to sheep, as they carry twice as much capital as sheep, besides supplying the demand of the larger towns for good milk and beef. So that the cattle population per 1000 acres is: — 106 in Banff, supplying the Aberdeen area with milk; 110 in Clackmannan, and 139 in Kinross, supplying Perth and Stirling; and 152 in Linlithgow (West Lothian) supplying Edinburgh and Stirling.

High sheep, low cattle, and low human numbers usually go together, thus it is that in the hilly bleak
and heather districts of the north, there are more sheep than cattle:— (Table p. 19)

<table>
<thead>
<tr>
<th>County</th>
<th>Sheep</th>
<th>Cattle</th>
<th>Population per 1000 acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sutherland</td>
<td>157</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>Inverness</td>
<td>194</td>
<td>17</td>
<td>31</td>
</tr>
<tr>
<td>Argyll</td>
<td>360</td>
<td>27</td>
<td>39</td>
</tr>
</tbody>
</table>

The climate and vegetation of the Cheviot Hills and the Southern Uplands are and have always been suited for sheep farming. The distribution per 1000 acres being:— (Table p. 19)

<table>
<thead>
<tr>
<th>County</th>
<th>Sheep</th>
<th>Cattle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roxburgh</td>
<td>1,324</td>
<td>52</td>
</tr>
<tr>
<td>Berwick</td>
<td>1,221</td>
<td>81</td>
</tr>
<tr>
<td>Selkirk</td>
<td>1,107</td>
<td>23</td>
</tr>
<tr>
<td>Peebles</td>
<td>907</td>
<td>32</td>
</tr>
</tbody>
</table>

THE PANJAB.

It is very difficult to collect correct statistics for the whole of the Panjab, as the accounts of the Native States and the outlying areas, are not definite in their statements regarding numbers of live stock. We therefore, must for the present, be content with tracing the movement of sheep distribution in the British area only, for which complete statistics are available. Even here there is one great drawback to a reliable census; the statistics depend largely on the time of the year when they are recorded. The nomadic nature of the flocks, and their annual migration from low wintering lands to the high summer grazings of the mountains, entirely changes the distribution in the two seasons, necessitating two recordings, if dependable information is required. For a historical comparison,
as 1800 was taken for Scotland being the period before the industrialisation of the country. 1900 is taken for the Panjáb, as only since then has there been any appreciable increase in modern industrialism in the Province.

The area of the Panjáb under consideration is about 62 million acres, comprising five political divisions, and extending over the fertile river valleys, and the densely populated town areas. Statistics for 1921, giving total and proportion per 1000 acres.

<table>
<thead>
<tr>
<th>District</th>
<th>Area in acres</th>
<th>Sheep Distribution</th>
<th>Population</th>
<th>Per 1000 acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambala</td>
<td>10,557,000</td>
<td>465,208</td>
<td>44</td>
<td>3,826,615</td>
</tr>
<tr>
<td>Jalandhar</td>
<td>11,407,000</td>
<td>613,313</td>
<td>54</td>
<td>4,191,898</td>
</tr>
<tr>
<td>Lahore</td>
<td>8,585,000</td>
<td>373,844</td>
<td>43</td>
<td>4,997,441</td>
</tr>
<tr>
<td>Rawalpindi</td>
<td>13,757,000</td>
<td>931,751</td>
<td>68</td>
<td>5,460,710</td>
</tr>
<tr>
<td>Multan</td>
<td>17,953,000</td>
<td>1,590,436</td>
<td>89</td>
<td>4,213,360</td>
</tr>
<tr>
<td>Panjáb</td>
<td>62,259,000</td>
<td>3,974,552</td>
<td>60</td>
<td>20,685,024</td>
</tr>
</tbody>
</table>

The same tendencies, as were noticed in the case of Scotland are operative here; Ambala and Lahore the two most densely populated areas have the lower proportion of sheep; while Multan and Rawalpindi the less densely populated districts have the greater number of sheep in proportion to their areas.

There are about four million sheep in the Panjáb, and three million goats, making altogether a total of seven million. This census was taken in 1920, and has been used as being the latest detailed one procurable. The low sheep numbers are accounted for by the fact the fact that the census was taken in the month of February, when practically all the nomadic flocks had started on their

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migration from the winter quarters in the plains of the British territory, towards their summer resort in the Himalayan regions and Hill states.

Since 1900 there has been a gradual decline in the number of sheep and goats from nine to seven million, while cattle have increased from eleven to fifteen million:

<table>
<thead>
<tr>
<th>Year</th>
<th>Sheep and Goats</th>
<th>Cattle</th>
</tr>
</thead>
<tbody>
<tr>
<td>1913 - 04</td>
<td>9,556,613</td>
<td>11,302,179</td>
</tr>
<tr>
<td>1912 - 13</td>
<td>8,815,400</td>
<td>14,223,891</td>
</tr>
<tr>
<td>1919 - 20</td>
<td>7,030,436</td>
<td>14,606,756</td>
</tr>
</tbody>
</table>

The increase has been in the proportion of from nearly one sheep for every head of cattle in 1900, to two head of cattle in 1923. The reasons may be stated as -- increase of cultivable land made available by the construction of irrigation works; the redistribution of population and the tendency to migrate to towns; and the increase of modern industrialism in this area.

This area may not be a wool producing part in the near future, as development seems to be following the example of England in increase of cattle and decrease of sheep stocks; but it has a very central position as a market for raw wool, being surrounded by hilly districts and wool producing countries on all sides.

The famous soft wools of Kashmir, the Bikanir wool of Rajputana, the down of the Himalayan sheep, and the fine Tibetan 'pasham', as well as the long wools from Central Asia, all find their way to the markets of the Panjab, whence they are distributed to the different countries. The afore-mentioned and other districts like Chamba, Simla Hill States, and Hazara are the sheep rearing areas, but unfortunately the statistics for them are not available.

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1. *Agricultural Statistics for India, Volume I, Section dealing with Division in each year.*
As is sufficiently evident from the facts of the previous section, the geographical distribution of the industry depends on physical, economic, social, and industrial conditions. America, India, Britain, Scotland, and the Panjab all alike furnish facts to prove the unmistakable existence of certain broad and general tendencies universally operative. With the growth of towns, the increase of population, and the spread of modern industrialism, sheep farming generally tends to be pushed up to the hilly and less densely populated areas, away from the fertile and densely peopled areas, giving place to perishable products or products of lower specific value near the large markets.

The wool-growing industry of Scotland, has greatly expanded during the last century. In the words of the Malthusian doctrine — Sheep population in Scotland has increased in geometric progression, while the number of cattle has not increased even in arithmetic progression. The growth of population and industrialism, by demanding the more economic use of fertile lands, has acted as disease and famine to sheep population in England, and has driven it into Scotland with its hills, rocks, and sparsely populated areas — areas wherein it has thriven owing to the specific nature of the wool. Taking into account only the productive i.e. cultivable land (14,389,000 acres) the distribution is in the ratio of 0:

<table>
<thead>
<tr>
<th></th>
<th>Scotlan</th>
<th>England</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arable</td>
<td>80</td>
<td>40</td>
</tr>
<tr>
<td>Pasture</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Rough Grazing</td>
<td>70</td>
<td>10</td>
</tr>
</tbody>
</table>

Thus 70% of the land being rough grazing in Scotland, 
the country offers great scope for a very flourishing 
industry in sheep raising. In Scotland at the present 
time, sheep farming is the staple industry of the 
Southern Uplands and the Highlands; whereas in England 
cattle raising seems to be on the increase, owing to 
her potentialities for industrialisation.

Sheep farming in the Panjab, as everything 
else, has been influenced by the most important factor 
in an agricultural country — rain. Some tracts were 
irrigated by the five rivers, but the major part depended 
on rain for its water supply. Years of drought, rainless-
ness, and famine, followed by seasons of normal rain, or 
heavy rains, floods and disastrous plenty, made the efforts 
of the farmers speculative. So that only the tracts in 
the immediate vicinity of the rivers were cultivated, 
the rest of the land being left as common grazing. This 
fact gave rise to a class of nomadic shepherds, who 
grazed their flocks of two to three hundred sheep each 
on the hilly districts of Kinloch, Spiti, and Lahaul, all 
summer, moving down to the plains as the grazing got 
finished and winter set in. During the last quarter of 
a century and more, the Panjab has been undergoing 
great change. The work of connecting the five rivers 
of the Province, and intertwining them with a trellis 
work of canals through arid dry lands, and turning them 
into rich green oases, has been going on with increasing 
success. This conquest of the great natural drawback 
of undependable rainfall, has, by stabilising production, 
made the Province independent and progressive. At the 
present time 49% of the total cultivated area is 
irrigated by canals and wells, and the proportion is
daily increasing.

This fact has given rise to a very pressing problem. The forest department is trying to preserve the forests; the cultivators have enclosed their lands for crops; and the poor shepherds never having had to provide fodder for their flocks knew not what to do. These nomadic shepherds with their huge flocks, believe in the principle of beg, borrow, or steal, and being pushed to the wall have had to resort to the last alternative. Thus they make their sheep veritable pests, feeding on other peoples crops, assisted by the ever ready 'dhanga'\(^2\) of the wandering herdsmen, spelling destruction to every tree by lopping off the branches.

The same custom prevailed in England and Scotland until the lands were enclosed, then during the winter months there was no fodder and the sheep had to be slaughtered, the meat being preserved for use. The introduction of root crops about a century ago solved the problem, by providing winter grazing for the animals. Now intensive cultivation is resorted to, and the shepherd farmers and sheep raisers have definitely to provide feeding for their flocks. On farms engaged purely in sheep raising as many as 3,000 sheep are sometimes reared, while the flocks of mixed farmers usually vary from one to five hundred.

In the Panjab, in the densely populated districts of Lahore, Ambala, and Jalandhar (c.f page 23), systematic breeding, intensive cultivation, and devotion of larger areas for fodder purposes should be encouraged. Here

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\(^1\) Dhanga in the Panjabi word for the shepherd's crook,
cattle raising would be of more value than sheep farming. There is no reason for despair, as the Panjab possesses grazing grounds not to be surpassed in the world, the waste crown lands and the lower slopes of the Himalayas could with little trouble be utilised to yield sufficient fodder for huge flocks. The use of root crops for winter feeding, instead of the customary migration to the plains, if it has been possible in a climate like Britain, would be much more so in the Panjab.

The results of recent research in Scotland have shown that the mineral content of the diet has a great influence on the health, rate of growth, and productive capacity of animals; different minerals affecting them differently. Therefore, for scientific procedure a chemical analysis of samples of the different hill pastures should be made, in order to determine the nature of the soil. After the analysis, experiments ought to be carried out on feeding various breeds of sheep and tabulating the results.

Owing to the general literacy of the people in Scotland it is easy to diffuse these ideas widely, and help directly through Agricultural Institutes and Voluntary Associations. In the Panjab, the general mass of the people are illiterate, and it is very difficult to get their sympathy in a short time. But still the problem is not insurmountable, now that the Province is so wide awake to the damage done by the nomadic flocks. The best thing would be to make special allotments of the waste and common lands. This will, in the first instance, no doubt, encroach on vested interests. A number of the well to do 'gaddis' (hill shepherds) in the hill
districts owning flocks of from 800 to 1200 sheep have grazed them on certain lands for generations. One of their ancestors had taken a 'nazar' or offering to the then ruling chief's, and was given a 'patta' or a permit to graze sheep in the territory. He then formed a company of shepherds, constituting himself the responsible head called the 'mahalundi', although the others called 'asam' or clients had equal rights with him, except that the 'mailani' or payment for droppings from landholders was always his. The problem now is arising about the ownership of the land — who is the owner, the shepherd or the state? These lands should after being tested be rented out for a certain number of years for grazing, according to their mineral value. This would act as a sort of a check on the number of sheep kept, and necessitate some sort of registration. Besides helping the shepherds, it would increase the revenue of the state, and the sum thus realised could be utilised in placing the woollen industry and its manufacture on a sound commercial footing, able to hold its own in the competition with other countries.

4. SHEARING.

The sheep both in Scotland and the Punjab are usually washed before being shorn. The small farmers take their little flocks to the village pond themselves, and hand wash them standing in the water; but in the case of larger flocks, it is common to compel the animals to leap into the water three or four times, driving them to swim across to the other end. Thus the farmers save themselves the extra labour of having to wash each one separately. The sheep are then left for a week to dry, but if there are no facilities for keeping them clean, they are shorn as soon as dry— in about 48 hours. The wealthier farmers usually hire labour for this purpose, but the operation is the same.

Shearing has been brought to a fine art in Australia and South Africa. Sheep on the huge sheep runs, are shorn with small machines, thus ensuring an even cut. In a working day of nine hours as many as 327 sheep can be shorn by one man and a boy.

The Scotch farmer cannot afford to invest in such an expensive machine, for his flocks are comparative small; so he carries on the operation in the old way with hand shears. This is very quickly and efficiently performed, as the sheep are systematically cared for, kept free from burr and dirt, and washed properly before shearing. The method is the same as was followed a century ago— "The operator sits on the ground, lays the sheep on its back between the knees, begins with

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the belly, and afterwards, having tied the animal's legs proceeds very expeditiously." He works at the rate of four to five sheep in an hour, thus being able to get through 40 to 50 sheep a day.

The operation is the same in the Panjab, but takes slightly longer, as the sheep are not systematically cared for:

![Shearing: Losang, Lahore: Autumn 1923](image)

It takes from 20 to 30 minutes to shear each sheep -- one man being able to get through 20 unwashed and 25 washed sheep in a day of 11 hours, with an hour rest in the afternoon, and an interval of five minutes between the shearing of each sheep. This interval is absolutely necessary, as the operation is tedious involving great strain on the muscles of the right hand.

In the Panjab, as in the north of Scotland, the Hebrides, and the Northern Islands, shearing is a bye

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1. Photo actually taken by the writer Sept. 1923
2. Information from an average of 50 instances taken at intervals in the different villages of the Panjab by the writer.
occuption, and the men who perform the operation belong to no special class, nor do they specialise in that department exclusively. Owners of small flocks usually shear their own sheep, but those with large flocks employ professional shearsers (who carry on this work as a seasonal side occupation) paying them according to rate prevailing for skilled agricultural labour, in the locality.

The operation is usually performed with a steel instrument about a foot in length, called 'shears' in English and 'kainth' in the Panjab. It is used generally in both countries, and has been in use from very early times, as it is mentioned even in the book of Genesis chapter thirty eight. The instrument is shaped as in the sketch below:

![Sketch of shears](image)

Shears or Kainth (कमीठ)

In the case of certain animals like the Kashmir goat and the Shetland sheep, which yield both hair and wool, it is next to impossible thoroughly to sort out the fleece, if the shearing is done in the ordinary way. The system, therefore, of pulling out the wool from the sheep's back has to be resorted to -- a painless process, and kinder to the animal, considering the fact that it leaves a coat of hair behind, as a protection against the bitter

© Sketch of a pair of shears used in the Panjab (as in photograph on page 92) and also seen in use in the Netherlands by the writer in June, 1936.
cold. This practice has been common in both Shetland and Kashmir for a long time, and is still prevalent in these areas. A few quotations are made which besides being very interesting throw a flood of light on the practice. According to an extract from the report of an eye witness touring through northern Scotland 2-- "The sheep were hunted by dogs; and when they had been caught, the rest of the wool was taken by plucking it (not by shearing the fleece)." Then again Sir John Sinclair says, 2-- "The aborigines are not shorn, but the wool is torn from their backs, by a process called 'roosing'." According to the report of a committee 3-- "The Shetland sheep are never clipt, or shorn, but about the beginning of June, the wool is pulled off (without the least pain) leaving the long hair." The same descriptions are equally applicable to northern Panjab. Even when the Kashmir goat was introduced into France in the beginning of the nineteenth century, the process for removing the wool was the same as in India 4-- "The down commences to grow in September, and develops itself progressively, until the end of March when it ceases to grow and detaches itself unless artificially removed. To collect

the down the shepherd waits for the period when it begins to detach itself, and then the locks of down which separate from the skin with little force, are taken off by hand; the down is taken from the animals every three or four days; in general it first begins to fall from the neck and shoulders, and in the following four or five days from the rest of the body; the collection is completed in the space of eight or ten days.
Sheep breeding in Scotland has received great attention as a private, scientific, and even academic study. As regards the breeds, only a third of the many varieties found in Great Britain are represented in Scotland. The Aborigines are the earliest type of sheep in Scotland, and, in their pure state, are found only in Shetland now. They are of two types—one is covered all over with fine wool; while the other has a coat of coarse heavy wool above, and a soft under fleece.

The yield of wool is exceptionally fine, and is of various natural colours—bluish grey, brown, deep russet, black, white, and silver grey (the finest). This wool, in its pure state, is now being sold in the market from 1/- to 1/9 per lb.

Their value will be appreciated only when it is realised, that a considerable proportion of the blood of this hardy stock runs in the veins of the sheep which to-day graze large areas of the bleakest land in Scotland—land so situated as to be unfit to maintain with profit any other kind of livestock. The Blackface sheep are so hardy and strong, that they can subsist on wide tracts of the highest hills and heath land, through severe winter snow and storm, when most British breeds would perish. They are spread over the Highlands, and South West Scotland, along the Pennines to Derby and North Ireland. In point of numbers and general distribution, the Blackface and the Cheviot are the most important breeds in Scotland.

2. Price quoted by Sales Manager at Munro's Woollen Mills,
Their flesh is excellent, but the fleece is coarse, the quantity depending largely on environment and locality. There is a great range of variation in the quality of the fleece, but it is usually long, open, coarse, and loose, and spoiled with kelps (dead hairs) and black hairs. The longer and coarser types—suitable for the manufacture of carpets and rough cloths—are mostly taken by America, while most of the medium wool is utilised for the homespun tweeds in the Islands of Harris and Lewis and the Outer Hebrides.

The weight of a fleece is generally between four and five pounds, fetching 12d. a lb. in 1927. In recent years, prices have varied considerably. In 1914, the price of unwashed wool was 6d., rising in 1920 to 1d., falling in 1922 to 4d., and recovering in 1924 to 3d. per lb.—the original pre-war level. The wool of the improved breeds sells at slightly higher prices, but these sheep are made unfit for the hardy life of the hilly districts.

The Cheviot sheep are among the most numerous sheep in Scotland, and have existed on the Cheviot Hills from very early times. The important Border woollen industry of to-day at Galashiels, Hawick, Selkirk, and Peebles owes its origin and growth to the existence of these sheep in that locality. They are found on the hilly districts round the Cheviot Hills, both sides of the boundary between Scotland and England—Northumberland, Roxburgh, Selkirk and Peebles; on the fertile lowlands—the Lammemoors, Sutherland and Caithness; and the milder parts of Inverness, Argyle and Skye. Thus they are in no way serious competitors of the hardy Blackface of the hills and heath lands, they being essentially suited for green hills and fertile pastures.

They excel the Blackface in size as well as value of fleece, which is twice as heavy. The fleece is white, soft, fine, clean, close, thick and dense; the staple is

(1). Price quotations in the Wool Year Books for each year.
of medium length—about 4 inches. This wool is used in the manufacture of tweed blends, the better kinds of hosiery, and the best and more expensive blankets. The price per lb. of the ordinary Cheviot wool has varied tremendously—1914—13½d.; 1920—42d.; 1921—11d.; 1924—26½d.; 1925—16d.; 1927—13-20d. The other breeds are the Leicester sheep (which are widely distributed for crossing, yielding from 7 to 9 lbs per fleece of long, light and lustrous wool); the Down breeds, and the Half-Bred breeds.

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**THE PANJAB.**

In the Panjab, we have to consider both the goat and the sheep as producers of wool, and it might be mentioned here that it is principally to the hair of the goat that the celebrity of the Eastern manufacture is due.

The wild goat yields a kind of rough heavy wool, usually utilised in the manufacture of coarse fabrics. It inhabits the Himalayan tracts west of the Beas River to Kashmir, Ladakh, Baltistan, Baluchistan and Afghanistan.

The Ibex is another variety of goat found in India from Nepal to Kashmir on the Himalayas. It has a thick under fur ('pashaw') below the coarse hair coating, very like the Shetland sheep. It has never been domesticated, but the wool is procured by killing the animal when it descends in herds to the valleys of Ladakh in Winter. The wool is greatly valued, and in Kashmir it is called 'asli tus', the genuine wool. It is of two natural colours, white and silver grey, and it is utilised for making the famous Ibex shawls, being soft and rich. The hair or upper coating is made into ropes and coarse cloth called "pattu" (a fabric like tweed).

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1. Wool Year Book—price quotations for each year.
2. For the breeds of sheep and goats in the Panjab refer: Commercial Products of India by George Watt. Section on Live Stock, pp. 743-749.
The Domestic Goat ranges in variety from the Alpine 'pashm,' yielding goat of the Himalayas, (like the Shetland sheep, yielding wool and hair) through the rough woolled goat of the lower hills to the hair yielding goat of the plains. The length and quality of the staple depending greatly on the altitude and the climate.

THE SHEEP.

The quality of wool of sheep, like that of the goats is determined by the geographical configuration.

The wild sheep, in the very mountainous regions of Western Panjab, yield an outer covering of thick wool (not hair, as it can be felted) with fine soft down below it.

The domestic sheep on the higher and drier regions of Afghanistan, Persia, and Baluchistan are usually the 'fat tailed' breed, giving a heavy yield of very fine wool. The fleece of these sheep is long, white and soft, and is used in the manufacture of the better class of goods. They have been crossed with Merino with successful results. Efforts have generally been made to introduce them into Mysore, Deccan, Rajputana, Bengal, the United Provinces, and the Panjab, but with varying results. The wool has grown coarser in the moister tracts, and the tail has proved a great drawback, being liable to disease. Effort should therefore be made in such a way as to retain all the other characteristics minus the tail.

The ordinary and more generally prevalent domestic sheep are met with throughout the plains and lower hills of India, up the Himalayas and all over Northern Asia. They are small in size, and yield on the average 3½ lbs per fleece—from 1 lb in the plains to almost 5½ lbs in the hills. The finest plains' wool is that of Hissar, but Ferozepore, Lahore, Jhang, Shahpur, Peshawar, Dera Ismail Khan, Amritsar, Multan, Rawalpindi, and Jehlum, each and all produce wool in fair quantity and quality. Although they compare very favourably with the produce of other parts of India, in comparison with western countries like England and Scotland, the scientific breeding is primitive, the are Khinted in size and color. Farm weight, 23 to 34 lbs as against 5½ lbs. for Scotland.
The wool is of many natural colours, being usually black or white in the plains, but of various shades in the hills — black, white, bluish brown, reddish brown or grey. The length of the staple varies from 2 inches in the plains to 6 inches in the hills. This wool is cheap, poor, dirty, short-stapled, and coarse (being 70 times thicker in diameter than the finest wool). It is classed in the lowest grade as carpet wool, and is utilised for the manufacture of rugs, blankets, and felt.

This wool fetches prices lower than those got for the same quality of wool imported from other countries. This is due to the fact that so far, independent initiative has not been practicable in the industry, owing to the ignorance, conservatism, and poverty of the shepherds who handle the entire industry. Sheep breeding if it may be called so where no conscious attempt has been made at systematic breeding, is carried on by 'telis' (طلي) — oil pressers, and 'gujars' (گذر) — cattle keepers, in the northern and southern parts of the Panjab; being the work of 'gaddis' (گدی) — shepherd hill men, in Kangra district. The 'gaddis' of Kangra are by nature the best shepherds among them all, and with a little training would be the making of the industry in the Province.

No attempt has yet been made to establish the scientific breeding of sheep on a commercial scale. A few experiments in this line have however been undertaken by the Panjab Government, with encouraging results. The Veterinary Department is making great efforts to grade up the 'desi' native sheep, with a view to producing an animal improved both in carcase and wool. Quite a number of Merinos have been imported from Australia, and distributed in different districts, especially Hissar and Kangra, or
sold at reasonable rates to breeders. Further encourage-
ment has been given through assistance in the formation
of breeding societies at Jehlam, Jhang, and Attock.
Favourable rates are secured for Cross-Bred Merino wool
by arranging sales direct, or through Cooperative societies,
with the mills.

Taking into account all that has been done so far, the problem, formerly owing to the lack of funds but
now chiefly due to the lack of qualified men, and scarcity
of staff, has not received, from the Department of Agriculture,
the attention commensurate with its importance, in view
of the ever increasing demand for good wool within the
country. The results, however, of Merino cross breeding
with the local sheep, where carefully carried out, have
proved to be very successful, and may be considered to
have passed the experimental stage. Captain Sewell (who
was deputed to the Hissar Farm for this purpose, and is
now a professor in the Veterinary College, Lahore) says,
that wool showing characteristics of half bred Merino,
grown at the Hissar Farm, fetched as much as 14 annas (14 d)
per lb in January 1922, from the Gawnpore Woollen Mills;
whereas wool ordinarily grown in the Province, fetches
4 and 6 annas (4 to 6d) per lb.

A few experiments have been carried out in
Kashmir with the Alpine breeds of sheep and goats. These
attempts at introducing the 'pasham'-yielding animals
of the high mountains on the lower and warmer slopes of the
Himalayas were not successful. The climate being damp
and not sufficiently severe, made the wool coarse, while
the soft under fur was entirely lost — an instance of the
operation of the law of survival of the fittest. Thus in
every case the climate and the altitude of the locality
determine the length of the staple. The account of another attempt, made by the French, to introduce the Kashmir goat in their country is interesting and instructive. Early in the nineteenth century, pure Kashmir sheep were brought to France and crossed with the native goats, but the experiment did not prove very successful. Even when kept pure they yielded only a small quantity of soft downy wool; so in 1822 a new cross was tried between pure Kashmir and an Angora buck with extraordinarily silky hair. The result was reported to be very satisfactory as regards the essential qualities of the down -- length, abundance, fineness, lustre, and softness -- at the very first cross. Further crossing was then carried out using only white animals, and employing for propagation bucks with the heaviest fleeces and the finest down. This wool was more valuable than that of the East (pure Kashmir), combining the softness of Kashmir with the lustre of silk. The uncrossed Kashmir yields 3 ozs per fleece and seldom 4 ozs; but the cross yielded 12 to 20 ozs each, and sometimes as much as 30 ozs of the down in the one season. These Kashmir Angora goats were more robust and more easily nourished than the common local goat, less capricious and more easily managed as a flock, and much more docile than sheep. They preferred the leaves of trees, but thrive well on hay and straw and even green fodder; they also fed with equal facility on heaths and the most abrupt declivities, where the sheep would perish; they feared not the cold, and remained out in open sheds all the winter. Thus if on the foreign soil of a warm moist country, this cross was such a success, why not on the native soil of the Kashmir goat, amid more natural surroundings? It would be a
paying investment as Kashmir wool is highly valued on account of its softness. The general complaint is that the supply is irregular, and not sufficient to satisfy the demand. In 1927 it is fetching 14 shillings a lb, as compared with Australian -- 2/3, Welsh -- 1/6 to 1/8, Shetland -- 1/- to 1/9, Panjab half bred Merino -- 1/2, per lb.

It must be remembered that sheep farming is as much a science as agriculture, and requires a great deal of research and attention. We must realise that it is a complex business, made up as someone has said of 20% science, 40% art, and 40% business management. To fit for this work special preparation is needed, and when people are fitted and prepared to do the work, there are as great possibilities, opportunities, and as great a future in this business as in any other business of city or town. In other countries figuring as great wool producing areas, the industry though in the first instance indigenous, is largely the result of extreme care and attention. As an extract from the speech of a wool enthusiast in Scotland at the end of the eighteenth century says -- "In many parts of Spain, they are as attentive to the breed of their sheep as they are to the chastity of their wives, or as we are to the breed of our horses".

Thus a great deal of scientific research will have to be carried out, both experimentally and theoretically, before any practicable advice is forthcoming. The defects in the Panjab wool are due to neglect in breeding, lack of care in shearing, unsystematic packing, without classification or separation of the different qualities of wool, and deliberate adulteration of sand and dust.

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0. Sale quotations as given by the Sales Manager of a reputed firm in Edinburgh in 1927. The Panjab prices are taken from his quotations in the office of the Dept. of Agriculture.

Jan 26, 1927.
in order to increase the weight. A few provisional suggestions might be made with safety. The goats and the sheep of the plains should be bred with the improvement of the flesh in view, the climatic conditions being too hot and too damp for a heavy-weight fleece. Besides as in Britain and America, modern industrialism will inevitably result in an increase of population, growth of towns, and introduction of factories, conjointly raising the value of the land in the fertile river plains; so that it would be false economy to hold them up as sheep runs. The southern slopes of the Himalayas supply the finest grazing grounds, while the climate being colder and not so damp favours fine woolled animals. So, keeping in view -- the suitability of the breeds for the district, the nature of the demand of the markets for wool, the provision of suitable food, systematic breeding, proper fixing of the lambing season, prevention of disease, and the inculcation of a spirit of business responsibility -- experiments might well be carried out at introducing the 'pashm' yielding animals of the very high mountains, and crossing them with the local breeds. The aim should be at producing uniformity, so as to facilitate grading in the highly organised markets of today; while at the same time keeping the sheep light, strong, and hardy, yielding a close pile of wool with fewer hairs, heavy fleece, long staple, soft, fine, and uniform texture, and distinct natural shades.
CHAPTER TWO.

THE MARKETING, DISTRIBUTION AND ORGANISATION OF THE INDUSTRY

1. Historical Survey. 60

2. Industrial Organisation, and the Methods of Marketing. 68

3. Trade Statistics : Imports and Exports. 74

4. The Nature of the Commodity : Its Marketability. 83

5. Estimates of Production and Consumption:
   Trade Comparison. 89
Chapter Two

THE MARKETING, DISTRIBUTION AND ORGANISATION OF THE INDUSTRY

1. HISTORICAL SURVEY.

It is a recognised economic fact that capital -- wealth invested in industry -- is an essential of production, and this capital rests on a surplus. In order to have capital there must at some previous time have been a surplus; so that the greater the amount of the capital to be employed, the greater must be the surplus to draw on. Every country has a natural advantage in some product, and it is the nature of this surplus, that in the first instance determines its trade, industries, and commerce.

The Panjab has always been an agricultural and pastoral region, with sheep raising as one of her chief industries. Flocks of sheep have always represented the wealth and capital of certain communities, engaged in sheep raising in the Province e.g. the 'gaddis' of Mangra and the 'gujars' and 'telis' of the plains. Until recently
and even now, capital is either hoarded or invested in land or live stock. Among the nomadic pastoral tribes, the investment usually took the form of movable property like cattle, sheep, and goats, which was their 'dhan', their 'mal', their capital, their wealth. The reason was the lack of facilities for banking and credit; lending involved much risk, and to the Muslims lending on interest was a sin, the little money given out on interest was for consumption purposes, on excessively usurious terms -- an anna in the rupee per month i.e about 75% per annum.

In the ancient literature of India -- the Ramayya and the Mahabharat -- cotton, woollen, and silk stuffs are mentioned over and over again. In the Ramayya the trousseau of Sita, the bride of Rama, consisted of woollen stuffs, furs, precious stones, fine silks and expensive jewels. In the Mahabharat in giving an inventory of the presents brought to Yudhistir to the Lord Paramount from the feudatory princes, mention is made of furs from the Hindu Kush, woollen shawls from Gujrat, of clothes made from the wool of sheep and goats, of thread spun by worms, and of plant fibre woven by the tribes of the North Western Himalayas (Panjab and Kashmir). Trade and commerce flourished even in the first century, when there was an extensive trade between India and Rome in spices, precious stones, muslin, cotton goods, and fine woollen fabrics. Persia was famous for

Gaddis - are the Hindu shepherds in the Kangra Hills.

Gujars - are the cattle breeders of the plains.

Telis - are the Hindu cattle breeders and oil pressers.
her shawls and carpets, China for her silks, India for her muslins, and cottons, and Kashmir for her woollen shawls.

According to the Ain-i-Akbari written by Abul Fazal in the reign of Akbar, the famous Kashmir shawls were very popular at Akbar's court, where frequent exhibitions were given of the artistic productions of the weavers of the Moghal Empire. Among the articles of trade from India, mention is several times made of the soft Kashmir wool, white Bokhara wool, and light and dark brown Tibet wool, — all from the neighbourhood of the Panjab.

Kashmir shawls and Persian carpets had a world reputation even at the end of the seventeenth century. The trade was carried on by European shipping, and even as early as 1613, an account is given of thirteen of the East India Company's ships arriving in England laden with indigo, sugar, rice, diamonds, silks, Persian carpets, Kashmir shawls, and cotton stuffs. The very fact of these articles being mentioned in the trade accounts, proves that these industries were carried on in the regions in the vicinity of the Panjab, and that they came into the hands of British merchants through the markets of the Panjab.

The natural advantage of Britain before she engaged in manufactures, and entered into general commerce, consisted mainly of wool, leather, and tin. Flanders, the Belgium of today, was the market to which the British wool was exported for manufacture; the advantage of Belgium consisted of an excessive supply of labour, which was devoted to the manufacture of

(1) Geography of all Nations, 1792. Art of Weaving
C F Gilroy, 1845.
textiles. This cloth when finished was re-exported to Britain for use. Thus Britain was the wool-raising country, and Flanders the scene of textile operations — the same relation exists between Australia and Britain today. Early Scotland lacked concentration, and her industries were unorganised; yet she too claimed a fair share of the British trade — exporting skins, wool, and minerals (articles in their raw state), and in return accepting high class goods and services from foreigners. Guiccardi, in his History of the Low Countries, takes notice several times of the wool of Scotland as an article of trade to Flanders and the Netherlands. Bruges in Flanders was the staple port for Scottish merchandise. Foreigners carried on the trade, brought revenue to the country, and were encouraged to settle down to teach the art to the native artisans, but they were never loved by the people who always treated them as aliens. Right up to the Union of Scotland and England, wool formed one of the chief sources of the revenue of Scotland. Even the ransom of David II in 1364 was paid by money raised from duties on wool. Then again the Equivalent sanctioned in 1706 at the time of the Union was stipulated to be applied to the assistance of wool and fishery.

"Two thousand pounds per annum, for the space of seven years, shall be applied towards encouraging and promoting the manufacture of coarse wool within those shires which produce the wool, and afterwards the

1. Pamphlets no 556, p 49, University Library Edinburgh.
same shall be wholly applied towards the encouraging and promoting the fisheries and other manufacture...."

-- thus the woollen industry was considered the most important in the economy of the nation.

After the Union the fortunes of the two countries are closely linked together; then follows the Union with Ireland, and trade free of impositions within the United Kingdom. Every attempt was made to encourage the export of woollens, the chief manufacture of Britain -- India being used as the main dumping ground. In 1608 about 20 pieces of broadcloth were sent to India; in 1609 from 300 to 300 pieces, and in 1610 about 1500 to Surat alone. In 1617 there was a great slump in broadcloth which became "a very drag" -- "a glut of broadcloth though the price was not much stood on". It was hoped to create a taste in India by selling below cost, and then as the article became indispensable gradually raising the price. But unfortunately the warmest region was selected as the market, where the climate did not necessitate the wearing of woollens. Besides, owing to the different values in the two countries, the cloth was too expensive for India, where a man could make three suits out of the money he paid for a yard of British cloth. Over and above it all the keen competition from the Persian, Armenian, Dutch, and private English merchants, did not leave much of a margin for profits.

While exports were encouraged, imports were looked on with suspicion, owing to the prevalence --

O. East India Trade in the 17th Century by S A Khan.
of mercantilism -- a favourable balance of trade should be maintained, and that bullion should be encouraged to flow into the country to pay for the exports. Despite all efforts, "As ill weeds grow apace so these manufactured goods from India, met with such a kind reception, that from the greatest gallants to the meanest cook maids, nothing was thought so fit to adorn their persons as the fabrics from India. Nor for the ornament of chambers like India screens, cabinets beds and hangings. Not only silk weavers, but all the trades of Britain suffered. Indian silks were used directly as a substitute for stuffs made of British wool, as well as being freely mixed with silk and worsted. Britain lost some of her foreign markets besides the home market. Germany used to import British woollens in exchange for her linens, but since direct trade was established between Germany and India, the Germans paid for their imports by exporting their linen to India, so that the reduced dealings with Britain made them start woollen manufacture of their own.

All legislation therefore, aimed at the protection of British industries, heavy duties and even fines and penalties being levied on imports. Appeal was made to the patriotic sentiment of the people, to wear home-made things -- as a couplet of the time well reflects the attitude:

The loom, the comb, the spinning wheel,
Do all support this kingdom's weal,
If you will wear your own silk or woollen,
You will keep your corn, your poor, your bullion.

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1. East India Trade in the 17th Century by S A Khan.
Measures were adopted to compel the use of indigenous wool for all purposes, without regard to its relative unfitness for some of them.

About the beginning of the nineteenth century questions were cropping up as to the removal of impositions on the export of wool, but manufacturers were not favourably inclined. In 1844 Gladstone in his proposals for the extinction of all duty upon raw wool, reviewed the history of the wool duties showing how the export of British manufactured goods had been adversely affected by the imposition of heavy duties in 1819 -- "There need be no fear that the price of English grown wool, would suffer by the repeal of the duty on foreign wool, as the two articles are not in competition at all, but are of mutual service being used together . . . . the consumption of the one promoting the consumption of the other."

Thus the Industrial Revolution placed Britain, safely out of the reach of immediate competition from any other country; much less from the east, where the old methods were still in operation, entirely unaffected by the turmoil of Western industrialism. England and southern Scotland became the manufacturing centres, and the wool growing industry was pushed up to the grazing grounds of the Scottish Highlands. Britain realised that in order to satisfy the increased demand for raw materials.
she must have free import, and that the encouragement of her sale of manufactured goods necessitated free export. So she adopted the free trade policy— a wise step for a country placed in her position. Thus having accepted the fact that different articles require different qualities of wool, she gave to her manufacturers the free privilege of choosing their wool, from any and every country—giving effect to the economic principle of buying in the cheapest market and selling in the dearest. Today every factory is using English wool, Welsh wool, German wool from Leipsic, Kashmir wool from India, Alpaca wool from America and Australia, and African wool from the Colonies, side by side with the locally grown wool.

In order to maintain simplicity, the workers may be classified into three groups: the artisan, the factory hand, and the country house. The workmen of this class amount to tens of thousands. They are the men who are best able to share the burden of the economic principle of buying in the cheapest market and selling in the dearest. Today every factory is using English wool, Welsh wool, German wool from Leipsic, Kashmir wool from India, Alpaca wool from America and Australia, and African wool from the Colonies, side by side with the locally grown wool.

Actually, the family group grew into village communities, at first MANITOBA, later division of labour.

The Factory Group and the Factory Owner.
2. INDUSTRIAL ORGANISATION, AND THE METHODS OF MARKETING.

A historical study of all the different modern nations shows that industrial methods develop through more or less widely defined stages of progress. Thus the woollen industry being one of the oldest industries, both in Scotland and the Panjab, furnishes a good case in point, illustrating the evolution of the methods of industry and the modes of marketing, in all their stages of development. Present Scotch industries and markets are on a very highly organised basis, except in the very north of the mainland, and the Northern and Western Islands. But the Panjab of today furnishes us with illustrations of actually existing instances of every stage of progress. In order to maintain simplicity, the stages may be classified into two groups -- the cottage, and the factory industry.

THE COTTAGE INDUSTRY.  

At the FAMILY STAGE industry and agriculture were carried on within the household group, merely to supply the family needs. Food, clothing, utensils, houses, everything was made by the immediate members of this self-sufficient family. The men, the women, the boys, the girls, all did their share on the field and in the home -- growing crops, looking after the animals, cooking, spinning and weaving. The Scotch Highland clans were just a glorified family, though now there are few, if any, actual instances. In a few out-of-the-way villages of the Panjab, on the remote hills, with few facilities for intercourse, this system still prevails.

Gradually, the family groups grew into village communities. At this HANDICRAFTS STAGE division of labour...
is noticeable in the rise of a class of professional workers, who though carrying on agriculture, fishing and subsidiary industries, were in the main, workers in a special industry, working in their own homes. Here begins to appear the problem of exchange, and the necessity of some sort of a medium, for it is not always possible to satisfy both parties in a transaction. Accordingly in this local market barter is resorted to in order to pay wages for service. The farmer gives a certain quantity of wheat to the village weaver annually for making cloth of the yarn supplied to him; the cobbler makes a certain number of pairs of shoes on a similar understanding in return for some other service etc. Practically every part of present Scotland is linked up by facilities for communication, though even up to the middle of the last century most of the outlying districts consisted of little village communities, exclusively satisfying the local demand of the local market with local labour and local materials. The Punjab, even now, is essentially a country of village communities. Though she boasts of many an ancient and historic city, only 10% of her population is urban -- out of a total population of 2,501,050 persons just 2,596,678 is urban, while 22,504,382 is rural. Until recently, and even today, in the outlying districts each village is provided with a complete equipment of artisans and menials, being thus a wholly independent entity. This local exclusiveness is intensified by extreme isolation, and the influence of the rigidity of the caste system which governs all vocations.

The next of DOMESTIC STAG was ushered in through the invasion of isolation. The increase of

@ The Punjab Census Report for 1921 (e.g. percentage and
proportion being deduced from various tables)
commerce, development of the means of communication, and extension of the market, all combined to direct greater attention towards the specialisation of commercial functions. Thus the chief characteristic of this stage is the advent of various kinds of commercial middlemen who act as intermediaries between the actual workers in their workshops, and the final purchasers, organising production and studying demand. This was the prevailing system in Scotland up to the middle of the last century, and even now is met with in the Hebrides, and Northern Islands. In the Panjab it is quite common. 6

When the material is not expensive, and the implements required to work it are simple, the entire process is carried on at the risk of the producers, the finished article being sold to the commercial middleman who might be an occasional visitor or a resident shop-keeper. In Scotland the tweed and the blanket industries of the Hebrides, and the hosiery industry of Orkney, and Shetland are on this basis of working. The middleman makes a large profit 1 -- the yard of tweed which costs the workers about 1/2 in raw materials, is sold to the middleman for about 2/10, which in the market fetches him 5/10 a yard. In the Panjab the blanket industry of Karnal and Nisar, and the 'patoo' and woollen weaving of the villages is also worked in the same manner. Often when the workers are in need, the middleman supplies them with funds on the understanding that the finished cloth will be sold to him at favourable rates, thus depriving the workers of a fair profit. In Scotland

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6 Second visit & investigation, Panjab 1924
Scotland 1926-27
the Scottish Home Industries Association and the Crofters' Agency, and in the Panjab the Cooperative Societies — all philanthropic bodies carried on by voluntary workers generally — are trying to mitigate this evil by organising production and proper advertisement of articles without expense to the local merchants. But the effect on private merchants working on business lines for profit, is disastrous, as these bodies are run mostly on donations and subsidies. Besides the private merchant and the philanthropic bodies, there is a third type of distributing agency making its appearance in Scotland in the Island of Skye — the workers engaged in the manufacture of woollens at Portree are not independent producers, buying or owning the materials, and selling the product when it is finished, but they are employees of an entrepreneur. Firms with headquarters at Glasgow, Inverness, and other centres, employ women to spin and weavers to weave the cloth in Skye itself for wages, the finished articles being sold by the firm's stores in these central markets.

This last method of distribution has usually prevailed in the case of the more expensive manufactures. Improved methods of manufacture, more plentiful supply of woollens, cheapening of the product, and a consequent regular demand for standardisation, have resulted in the necessity of the merchant purchasing the raw material for the workers, and contracting to buy the finished article and undertake all the risks of marketing. The shawl manufacturers of Kashmir resort to this system because the wool is too expensive and beyond the means of the workers, another reason being to insure against...
the mixing of inferior wool with the good stuff; while the aim of the Scotch firms is to ensure a regular and standard supply.

The manufacture of other cloths requiring expensive plant involve deeper economic problems. The merchant who contracts to buy the finished product, purchases the materials, and supplies the machinery in quarters let out on hire in a large building. Mechanical power is not used, the workers are free regarding hours of work, meal times and holidays, being responsible merely to hand in a particular design, worked with the materials supplied, by a definite date. There are no instances of it in Scotland now, but the carpet factories of the Panjab are worked entirely on this method. It is only one stage removed from the modern factory system, giving rise to many similar problems of organisation.

THE FACTORY INDUSTRY

This stage is distinct from the cottage stage in that it implies the advent of large capital in the field of manufacture, and the acquisition of the control by the owners or users of the capital, over the whole process of production as well as distribution, extreme specialisation, and minute division of labour, and yet perfect coordination are combined under a single controlling organisation.

In the Panjab there are only a few factories run on modern lines, but practically all British industry is highly organised and at this stage. Even the markets and the methods of sale partake of this high degree of development. A long stretch of time elapses between the shearing of the wool and the manufacture of cloth from that wool, to the distribution of the finished article.

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among the consumers, owing to the extreme division of labour, and the specialisation of functions. Thus the speculative nature of the enterprise is accentuated.

The subject has been treated in greater detail in section 4 (pages 68-73) of this chapter, dealing with the conditions of modern markets.
The trade statistics for Scotland have been considered for the year 1924 as being the latest complete year giving a detailed and comprehensive account. They are based on the "Annual Statement of the Trade of the United Kingdom with Foreign Countries and British Possessions" 1924 (four volumes). Two other reasons led to the choice of the year 1924 — firstly, that after the war it is the first year of normal conditions in the woollen trade, which was not affected by the vast accumulated war stocks; secondly, that it is nearest to 1922 the year chosen for the Panjab, thus making the conditions in the two countries as nearly alike as possible for a comparison of general tendencies. These statistics are only navigation statistics, referring to the trade carried by sea from the ports. England and Scotland are so closely knit (at least as far as economic and trade information goes) that it has been found impossible to procure separate statistics for each. The railway accounts state the amount and value of the articles carried by the different lines, but fail to give particulars as to the direction of the destination. So that it has had to be assumed in this section, that exports and imports of wool across the Border balance, thus being of consequence only in a consideration of the total volume of trade. Accordingly, from the trade statistics of British ports, just the Scotch ports were selected, taking their total in value and quantity to construct the accompanying table, a perusal of which leads to the following interesting observations.
## SCOTLAND TRADE RETURNS 1924

### RAW WOOL

<table>
<thead>
<tr>
<th></th>
<th>1924</th>
<th>Value £</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(100 lbs)</td>
<td></td>
</tr>
<tr>
<td>Imports</td>
<td>16,563</td>
<td>145,771</td>
</tr>
<tr>
<td>Glasgow</td>
<td>9,710</td>
<td>79,071</td>
</tr>
<tr>
<td>Leith</td>
<td>6,853</td>
<td>66,700</td>
</tr>
<tr>
<td>Rate: £8/16/- per cental i.e. 1/9 per lb.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>126,130</th>
<th>821,989</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exports</td>
<td>117,918</td>
<td>693,643</td>
</tr>
<tr>
<td>Dundee</td>
<td>3,827</td>
<td>25,521</td>
</tr>
<tr>
<td>Glasgow</td>
<td>88,967</td>
<td>493,593</td>
</tr>
<tr>
<td>Leith</td>
<td>28,124</td>
<td>174,819</td>
</tr>
<tr>
<td>Rate: £5/17/- per cental i.e. 1/2 per lb.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>8,212</th>
<th>129,546</th>
</tr>
</thead>
<tbody>
<tr>
<td>Re-exports of Imported Wool</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glasgow</td>
<td>228</td>
<td>2,329</td>
</tr>
<tr>
<td>Leith</td>
<td>7,924</td>
<td>126,017</td>
</tr>
<tr>
<td>Rate: £15/12/7 per cental i.e. 3/18 per lb.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Goods partly or wholly manufactured.

<table>
<thead>
<tr>
<th></th>
<th>Value £</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imports</td>
<td>197,587</td>
</tr>
<tr>
<td>Yarns woollen &amp; worsted</td>
<td>160,777</td>
</tr>
<tr>
<td>Glasgow</td>
<td>155,476</td>
</tr>
<tr>
<td>Grangemouth</td>
<td>13,176</td>
</tr>
<tr>
<td>Leith</td>
<td>12,125</td>
</tr>
<tr>
<td>Manufactured goods</td>
<td>16,310</td>
</tr>
<tr>
<td>Grangemouth</td>
<td>2,261</td>
</tr>
<tr>
<td>Leith</td>
<td>14,549</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>1,878,823</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exports</td>
<td>1,878,823</td>
</tr>
<tr>
<td>Yarns Woollen and worsted</td>
<td>291,640</td>
</tr>
<tr>
<td>Glasgow</td>
<td>177,349</td>
</tr>
<tr>
<td>Grangemouth</td>
<td>2,120</td>
</tr>
<tr>
<td>Leith</td>
<td>112,371</td>
</tr>
<tr>
<td>Manufactured goods</td>
<td>1,586,983</td>
</tr>
<tr>
<td>Glasgow</td>
<td>1,393,412</td>
</tr>
<tr>
<td>Grangemouth</td>
<td>15,641</td>
</tr>
<tr>
<td>Leith</td>
<td>177,930</td>
</tr>
</tbody>
</table>

---

Note: The statistics are taken from various tables in the "Annual Statement of Trade of the United Kingdom with Foreign Countries and British Possessions" 1914, volume 4: Section dealing with yarns and worsted (p. 104-120). Being deductions from various tables, the exact pages of reference are not stated, as the main source being responsible for the deductions.
LIVE STOCK:

The market for live stock is very limited, there being little import of animals into Britain for other than food purposes. A small trade is carried on with other countries in expensive sheep and lambs, their number not exceeding one or two thousand. No definite facts are available for the traffic of sheep and goats across the Border.

RAW WOOL:

Imports: Glasgow and Leith are the two chief importing ports for raw wool, the total in 1934 amounting to 1,656,000 lbs worth £145,771, working out to 1/8 per lb. This is expensive wool coming mainly from Australia, Canada, and Africa, accounting for just a thirtieth of the total used in Scotland for manufactures (30,000,000 lbs — Ch 2, s 5, Scotland, Production, page 74). Glasgow imports 68% and distributes it to the manufacturing districts in that area, Leith imports 43% but re-exports it all.

Exports: Scotland exports 12,613,000 lbs worth £ 821,984, while the home production is estimated at 33,500,000 lbs worth £ 2,245,833 (Ch 2, s 5, Scotland, Production, page 74), i.e. she exports a third of what she grows. Glasgow is the only exporting port on the West coast, accounting in quantity for 70% of the exports, and serving from a very central and advantageous position the area third in density of sheep population (Ch 1, s 2, Scotland, page 7). Leith on the east coast exports 30%, serving the densest sheep raising area in Scotland and also in the world (Ch 1, s 2, Scotland page 7). The low figure is accounted for by the fact that the Border mills utilise the greater proportion
of the wool, the rest being transported by rail across to Yorkshire (exact figures for which are not procurable).

Scotland depends almost entirely on British grown wool for her manufactures, as out of 30,000,000 lbs consumed by the mills only 820,000 lbs is foreign wool. A good deal of Welsh wool is used in Scotland, while quite a quantity of Scotch grown wool is used in England and fetches 1/2 a lb (page 60).

MANUFACTURED GOODS:

The imports consist mainly of woollen and worsted yarns, three fourths of which are taken by Glasgow.

The export of yarn from Glasgow and Keith is slightly more than the amount imported in yarns; though the main item of this class of woollen exports is wholly manufactured material, being five sixths of the total value of manufactured exports.

Scotland exports £1,979,323 worth of manufactured goods, which are about half of the total manufactured by her mills -- worth £3,000,000 (Ch 2, s 5, Scotland, Consumption, a, page 75).

THE PANJAB:

The trade statistics for the Panjáb have been taken for the year 1922, as being the latest procurable in detail. The last report of the Internal Trade was issued for 1921 - 22 since when it has been discontinued. The Report of the External Land Trade is published triennially, the last one was issued for 1921 - 22, the next one for 1925 - 26 will soon be published but so far has not been put on the market. Considering all things, for purposes of a broad comparison, it is immaterial whether 1922 or 1926 is taken, as they are both normal years and equally distant from 1924, the year chosen for Scotland.
### PANJAB 1921 - 22 Trade Returns

#### Sheep and Goats

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Value Rs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imports</td>
<td></td>
<td></td>
</tr>
<tr>
<td>By Road</td>
<td>59,246</td>
<td>524,204</td>
</tr>
<tr>
<td>Central Asia (via Kashmir &amp; Kulu)</td>
<td>15,772</td>
<td>111,196</td>
</tr>
<tr>
<td>Tibet</td>
<td>2,210</td>
<td>11,050</td>
</tr>
<tr>
<td>By Rail and River</td>
<td>13,562</td>
<td>100,146</td>
</tr>
<tr>
<td>Rajputana</td>
<td>43,474</td>
<td>413,008</td>
</tr>
<tr>
<td>Other places</td>
<td>42,805</td>
<td>410,354</td>
</tr>
<tr>
<td>Exports</td>
<td></td>
<td></td>
</tr>
<tr>
<td>By Road</td>
<td>530</td>
<td>4,986</td>
</tr>
<tr>
<td>By Rail and River</td>
<td>nil</td>
<td>nil</td>
</tr>
</tbody>
</table>

#### Raw Wool

<table>
<thead>
<tr>
<th></th>
<th>Q. Kgs.</th>
<th>Value Rs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imports</td>
<td></td>
<td></td>
</tr>
<tr>
<td>By Road</td>
<td>51,424</td>
<td>2,469,798</td>
</tr>
<tr>
<td>Afghanistan</td>
<td>11,463</td>
<td>785,984</td>
</tr>
<tr>
<td>Central Asia</td>
<td>340</td>
<td>4,800</td>
</tr>
<tr>
<td>Tibet</td>
<td>1,948</td>
<td>77,224</td>
</tr>
<tr>
<td>By Rail and River</td>
<td>9,215</td>
<td>703,960</td>
</tr>
<tr>
<td>Sind and Baluchistan</td>
<td>39,961</td>
<td>1,663,814</td>
</tr>
<tr>
<td>United Provinces</td>
<td>6,800</td>
<td>442,746</td>
</tr>
<tr>
<td>Rajputana</td>
<td>8,718</td>
<td>348,720</td>
</tr>
<tr>
<td>Karachi (foreign wool)</td>
<td>14,608</td>
<td>562,882</td>
</tr>
<tr>
<td>Calcutta (ditto)</td>
<td>3,878</td>
<td>250,589</td>
</tr>
<tr>
<td>Other places</td>
<td>17,578</td>
<td>74,715</td>
</tr>
</tbody>
</table>

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Exports</td>
<td></td>
<td></td>
</tr>
<tr>
<td>By Road</td>
<td>173,584</td>
<td>4,949,602</td>
</tr>
<tr>
<td>By Rail and River</td>
<td>nil</td>
<td>nil</td>
</tr>
<tr>
<td>Sind and Baluchistan</td>
<td>173,584</td>
<td>4,949,602</td>
</tr>
<tr>
<td>United Provinces</td>
<td>16,319</td>
<td>464,811</td>
</tr>
<tr>
<td>Rajputana</td>
<td>12,944</td>
<td>396,725</td>
</tr>
<tr>
<td>Manufactured Goods</td>
<td>Q. Mounds</td>
<td>Value Rs</td>
</tr>
<tr>
<td>--------------------</td>
<td>-----------</td>
<td>----------</td>
</tr>
<tr>
<td>Rajputana</td>
<td>5,926</td>
<td>171,380</td>
</tr>
<tr>
<td>Karachi</td>
<td>123,368</td>
<td>8,511,797</td>
</tr>
<tr>
<td>Calcutta</td>
<td>1,595</td>
<td>46,227</td>
</tr>
<tr>
<td>Bombay</td>
<td>11,669</td>
<td>336,551</td>
</tr>
<tr>
<td>Other places</td>
<td>761</td>
<td>22,111</td>
</tr>
</tbody>
</table>

**Imports**

<table>
<thead>
<tr>
<th>By Road</th>
<th>---</th>
<th>1,380,738</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kashmir &amp; Kulu</td>
<td>---</td>
<td>23,551</td>
</tr>
<tr>
<td>Central Asia (shaws via kulu)</td>
<td>---</td>
<td>23,391</td>
</tr>
</tbody>
</table>

| By Rail and River | --- | 3,172,712 |
| ---               |     | 712,215   |

**Exports**

<table>
<thead>
<tr>
<th>By Road</th>
<th>---</th>
<th>22,133</th>
<th>3,217,331</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Asia (through Kashmir)</td>
<td>24</td>
<td>12,020</td>
<td></td>
</tr>
</tbody>
</table>

| By Rail and River | --- | 22,109 | 2,304,311 |
| ---               |     | 712,215 |

| Carpets and Rugs (via Bombay 33%) | 3,097 | 473,956 |
| Foreign piece goods | 40  | 9,427   |

| Indian piece goods (via Calcutta 40%) | 10,610 | 1,603,113 |
| Other stuffs (U.P. taking ⅔) | 8,362  | 1,115,803 |
Fortunately, unlike Scotland, it has been possible to get distinct returns for the Panjab, absolutely independent of the statistics for India as a whole. It might be mentioned here that they refer only to British Panjab, covering an area of 62,000,000 acres (page 23).

**SHEEP AND GOATS:**

There is a considerable importation of live stock into the Province amounting to 59,348 sheep and goats valued at Rs 524,304 -- i.e about Rs 9 per head. Rajputana contributes 73 %, while Tibet 23 % of the total number of sheep and goats imported. The export trade is quite small and negligible, from the commercial point of view.

**RAW WOOL:**

The total imports of raw wool into the Panjab are 81,424 maunds valued at Rs 2,469,793 -- working up to Rs 46 per maund. Of this 18 % comes by road from Tibet across the Frontier, 33 % by rail from Rajputana, 17 % from the United Provinces, 15 % from Sind and Baluchistan, and 9 % of the total quantity of imported raw wool from foreign countries through Karachi and Calcutta.

The exports amount to 173,584 maunds worth Rs 4,949,602, the price per maund thus coming to Rs 28/10/- or Rs 41/- a maund.

None of this is sent across the Frontier, the whole being exported by rail or river. About 70 % of this is exported to foreign countries through Karachi.

The fact that the total production of wool in the Province is estimated at 171,000 maunds (Ch 2, s 8, Panjab, Production, page 76), and the export 173,584 maunds leads to the conclusion that the manufactures depend mainly on imported wool.
MANUFACTURED GOODS:

The imports are valued at Rs 1,280,732. About 25% are the finer foreign piece goods imported via Bombay, while 55% are the coarser and more bulky stuffs from Sind and United Provinces.

The exports valued at Rs 3,217,331 are twice the value of the imports of manufactured goods, and as much as the amount consumed in the Province itself (Ch 2, s 5, Punjab, Consumption, page 79). Out of this 50% is exported through Calcutta to foreign countries, and 35% is taken by the United Provinces.

THE MARKETS:

The Punjab industry is in the hands of small producers, and not in the hands of the monied classes, as in Australia and Britain, hence the necessity of a class of middlemen for buying wool from these small farmers, in the industrial organisation of the Province. The long stapled wool coming from the Hill States, and across the Frontier is marketed at the two annual fairs 'Baisakhi' (April) and 'Diwali' (October), in the two shearing seasons at places like Simla and Rampur.

The chief markets for raw wool are Fazilka, Rawalpindi, and Multan.

Fazilka is in Jalandhar District in a good sheep area, and also is the market for Bikanir and Hissar wool, being situated on the main railway line. It is the chief exporting centre for raw wool in the Province, in fact the most important mart for wool in India. According to the Notes on Wool by Silver and Mehta "The largest market in India for indigenous wool, is at Fazilka, where
the Bikanir wool, perhaps the best in India, is brought for sale. At this place there is machinery for cleaning the wool before it is sent out. The chief port for the Panjab is Karachi, the nearest though almost 300 miles away.

Rawalpindi is the market for the wool coming across the Frontier and the northern and western districts.

Multan serves the south western area of Sind, Baluchistan, and Dera Ghazi Khan.

Amritsar is the centre for all the wool coming from Tibet, carried mainly by road.
The type and extent of markets, and their essential qualities, depend entirely on the nature of the commodity, and the stage of industrial progress reached by the nation. Prices in their turn are determined by the extent of the market -- local supply being the chief determinant in a small market, while in a large market comprising a wider area, prices tend towards equality for the same quality of material. In a consideration of the nature of the commodity, three distinct markets have to be taken into account, whose extent depends on the nature of the commodity.

**SHEEP**

The market for sheep and other wool producing animals is not very wide being largely local. This is due to the fact that the animal is a bulky commodity, quickly perishable, and not sufficiently systematically produced to lend itself easily to precise grading. Britain being one of the leading modern industrial nations, has a small trade in sheep and goats with foreign countries; the few she imports are for breeding purposes, valued at several pounds sterling each. The trade is local, between the different counties, and carried on at shows, fairs, and exhibitions. The Panjab is mainly an agricultural country, just beginning to be affected by the rush of modern industrialism, so that she carries on a large trade in sheep and goats numbering several thousands; but this trade is confined to just the neighbouring countries of Tibet and Rajputana. The average price of each animal imported into the Province amounts to Rs 9
(about 13 shillings), which is also the usual price paid for the local animals of that quality.

RAW WOOL:

The market for raw wool is much more complex, owing to the specific nature of the commodity, and the fact that it is not so perishable. It can be so produced that it lends itself to precise grading and accurate classification, and to tests which yield identical results when applied by different officials. Exact specification of wools is not as easy as for cotton — "Not merely does each fleece present widely different qualities, which must be 'sorted' before they can be used; but, further, each district has its own varieties; and, even if the breeds were all the same, differences of soil and climate would soon differentiate them". The Panjâb wool being produced under conditions closely approaching to natural growth, is subject to each one of these influences. It is graded as an inferior quality of wool, fetching prices lower than those received for the same quality of wool from other countries. The Scotch Blackface wool is of the same coarse quality suited for making rough cloths, in 1924 it fetched a shilling a pound, while the Panjâb wool sold at Karachi for Rs 39 a munda, i.e. 8d a lb. The reasons for this are — sheep breeding in the Panjâb does not aim particularly at any definite quality of wool; sheep before being shorn are not washed properly, and sometimes even allowed on purpose to frequent places where they get dust and sand into their fleece, which while increasing the weight, depreciates the value of the wool; shearing is careless.

<sup>0</sup> Industry and Trade by A. Marshall. Page 785

<sup>6</sup> Scotland — Four quotation in 1926 Year Book for 1926.

and does not give a uniform cut of staple; wool is jumbled up in packing; not only is there no separation of different qualities of wool from the same fleece, but even the wool of absolutely different fleeces is mixed together without separation and classification; and to crown it all, deliberate adulteration of sand and dust is often resorted to in order to increase the weight -- Is then the low price of wool in the Punjab a fact to be surprised at? The wonder really is that the price compares so favourably with Scotch wool in spite of all these drawbacks. With a little care and improvement the 'desi' wool of the Punjab could be produced much cheaper than the imported wool, and yet be better in quality.

Scotch wool of the same quality fetches higher prices, being specially produced from carefully bred animals, clean washed, and kept free from burrs and dust. The fleeces of the different breeds of animals are kept separate, but there is not very much further classification. Consequently, even these bales of Scotch wool are apt to be of uncertain quality, and to trouble the manufacturer by not being throughout perfectly adapted to exactly the same methods of handling. So that in many cases several mills take certain clips year after year, by direct purchase from the grower, at higher than market value, so as to ensure a continuous supply of that particular quality of wool.

"This difficulty is less in the case of wool from new countries. New Zealand sheep for instance are descended from similar ancestors, imported not long ago; and raised on large runs, where there is much uniformity of average circumstance and great
freedom of interbreeding. Thus certain standards of imported wools give a definiteness to the great markets of London and other large centres.

The market for wool is worldwide, giving scope to a great deal of variety, ingenuity, and business capacity. Fashion is an important factor in determining the value of the different fibres in the market. The differences in quality of the texture of the raw fibres are much greater in wool than in cotton. This brings into play an element of risk and speculation necessary for the healthy continuance of business and trade.

Moreover, "the total market for wool is so great, and the demand of the western world for woollen goods is so much less easily satiated than for cotton, that the wool market of the world is very highly organised ....... 2". This world demand gives to prices a tendency towards equality for the same goods of wool; prices being affected generally by great causes, while small local dislocations neutralise each other and are lost in large issues. In the two countries under consideration the following price movements are noticeable:

<table>
<thead>
<tr>
<th>Year</th>
<th>1914</th>
<th>1920</th>
<th>1922</th>
<th>1933</th>
<th>1935</th>
<th>1936</th>
<th>1937</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panjab per maund</td>
<td>Rs ...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average price</td>
<td>23</td>
<td>45/60</td>
<td>25/6</td>
<td>32</td>
<td>39</td>
<td>31</td>
<td>32</td>
</tr>
<tr>
<td>Scotland d per lb</td>
<td>......</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cheviot</td>
<td>15½</td>
<td>42</td>
<td>11</td>
<td>19</td>
<td>25½</td>
<td>18</td>
<td>20</td>
</tr>
<tr>
<td>Blackface</td>
<td>6½</td>
<td>18</td>
<td>4½</td>
<td>9½</td>
<td>12½</td>
<td>12</td>
<td>12½</td>
</tr>
</tbody>
</table>

Up to 1917 the market for wool was open to competition and the prices soared high owing to the war demand. In 1917 the British Government bought off the whole of the

---


1) Panjab - quotations from the Manager, Standard Woollen Mills.
2) Scotland - Average of price quotations in the wool year.

Books for each year.
Australian and South African wool clips for the entire period of the war and two years after, controlling supply and regulating prices. In 1919 the market was once again thrown open to competition, consequently prices soared up very high in 1920. But the accumulated war stocks had their effect, and in 1921-22 there was a great slump in values, resulting in a trade depression. In this year the British Australian Wool Realisation Association (B. A. W. R. A.) was formed to tackle the problem and handle the war stocks. After this trade gradually recovered and prices rose until the last half of the year 1925, when the low rate of the French exchange lowered prices and adversely affected the trade.

Thus we see how the possibility of complete sampling and grading, combined with the free play of speculative influences lends to the modern wool markets the nature of highly organised markets.

MANUFACTURED GOODS:

The market for manufactured goods is still wider and much more complex. Woollens possess all the qualities required for rendering any class of products suitable to be handled in an organised market, and also lend themselves to great possibilities of mass production. The composition of the different qualities of fibres and textures of raw wool with each other, combined with the influence of fashion in ever demanding new designs and new patterns which necessitate the use of particular kinds of wool, gives to the market for manufactured goods a doubly speculative nature. Owing to the wide scope of the market, opportunities for speculation and the liability to considerable fluctuations in price
do not allow of dealings to be exclusively confined to producer, consumer, and merchant alone; but attract that class of professional speculative dealers, who assure the continuity of the business as a successful proposition.
The statistics have been based on the year 1924 as the first normal year in the woollen trade, after the war, which was not affected by the accumulated war stocks. The estimates are mere deductions from these statistics, hence do not claim to be infallible.

**PRODUCTION:**

The average annual production of wool is arrived at by multiplying the total number of sheep, by the average yield of wool per fleece, and the number of shearings per year:

\[(7,000,000 \text{ sheep} - \text{page 15})(\frac{5}{2} \text{ lbs of wool at one shearing})\]  
\[\text{annual production of wool: } 38,500,000 \text{ lbs of wool annually.}\]

According to the raw wool export statistics (page 60), the price per lb of the exports of Scotch grown wool for 1924 as well as for 1922 works up to \(\frac{1}{2}\). Taking this as the average price for Scotch grown wool, the value of 38,500,000 lbs of home grown wool will be \(\£2,245,833\).

Another method of checking the validity of the above estimates is to add the production of raw wool to the total imports of raw wool, and find out if they balance with the sum of the amount used by the mills, and the export of raw wool:

a) Production of raw wool 38,500,000 lbs worth \(\£2,245,833\).

b) Imports of raw wool 1,656,300 lbs worth \(\£145,771\) (p 60).

c) Raw wool consumed by manufactures 50,000,000 worth \(\£1,593,750\).

Dr Oliver of Galashiels in the Wool Year Book for 1922 estimates the annual consumption of wool by the mills at 50,000,000 lbs. Most of this wool, about \(\frac{3}{4}\), is Welsh wool costing a shilling a lb in 1924; about
is Scotch grown, worth 1/2 a lb, the greater part of the local crop being exported owing to its coarseness and unsuitability for tweed manufacture; 1/2o is the very expensive Australian and African importation costing on the average 1/9 per lb. Thus taking the average price of the raw wool used in the mills at 1/2 per lb, the value of 30,000,000 lbs works up to £1,593,789.

d) Exports of raw wool 12,613,000 lbs worth £821,989. (p 60)

Thus A plus B ought to equal C plus D

\[ \begin{align*}
33,500,000 \text{ lbs} & \quad £2,245,833 \\
1,666,300 \text{ lbs for } £141,771 & \\
\text{i.e } 40,166,300 \text{ lbs worth } £2,391,604 & = \\
30,000,000 \text{ lbs for } £1,593,789 & \quad 12,613,000 \text{ lbs for } £821,989 \\
\text{i.e } 42,613,000 \text{ lbs worth } £2,415,739 & \\
\end{align*} \]

Consumption:

The home consumption is deduced by subtracting the sum of the value of woollens manufactured by the mills, and the import of manufactured goods, from the total exports of manufactures and yarn:

a) Scotch manufactures worth £3,000,000 (Wool Year Book "23")
b) Imported manufactures worth £16,310 (page 60).
c) Exported manufactures worth £1,586,983 (page 60).

Consumption equals (a plus b) minus (c).

\[ \begin{align*}
\text{i.e } \quad £3,016,310 & - £1,586,983 \\
\end{align*} \]

The above figures show that Scotland consumes half of what she manufactures, exporting the other half out of the country. So that regarding the decisions affecting the woollen industry, local as well as foreign conditions of demand must be considered.
The Panjab estimates have been based on the statistics for the year 1922, as being the latest available, and the nearest to the ones taken for Scotland, in order to minimise as far as possible any discrepancy in the comparison. Only the British territory comprising an area of 97,309 square miles (page 2), is dealt with in this section.

**Production:**

Applying the same principles as to Scotland, the average annual production of wool in the Panjab is: (number of sheep) (wool per fleece) (no of shearing) (4,000,000 → p 32) (3½ lbs per fleece at the £, -p 39)
i.e. 14,000,000 lbs or 170,732 maunds (62 lbs to the maund).

According to the raw wool export statistics (page 63) the price per maund of the exports of home grown wool, in 1922, works up to Rs 22/10/- (page 65). Therefore the value of the total production of 171,000 maunds is worth Rs 4,394,375.

For checking the validity of this estimate, the sum of the production and imports of raw wool, ought to balance with the sum of the amounts consumed by manufactures, and the export of raw wool:

a) Production of raw wool 171,000 mds worth Rs 4,394,375.
b) Imports of raw wool 51,424 mds worth Rs 2,469,798 (p 63).
c) Raw wool consumed by manufactures 45,467 maunds worth Rs 2,161,936. The total consumed by manufactures is estimated by the Department of Industries at 45,467 mds.

By mills 18,293 maunds.

By handlooms 27,164 maunds (i.e. 450 handlooms, using 15 lbs daily per loom, and working for 330 days in the year).

Practically the whole of the home grown wool is exported.
(Exports of raw wool being 173,584 mds, while the home production is about 171,000 mands). So that manufactures mainly utilise the imported wool, the value of which works out at Rs 48 per mand (Rs 2,469,798 — page 63). Thus the 45,457 mands of wool utilised in manufactures within the Province is worth Rs 2,191,936.

d) Exports of raw wool 173,584 mds worth Rs 4,949,502 (p 63)

Thus A plus B ought to equal C plus D 171,000 mds for Rs 4,994,375 & 51,424 mds for Rs 2,469,798 i.e. 222,424 mds worth Rs 7,464,173.

EQUA L TO 45,457 mds for Rs 2,191,936 & 173,584 mds for Rs 4,949,502 i.e. 319,041 mds worth Rs 7,131,538.

CONSUMPTION:

In order to arrive at the amount of woollens consumed within the Province we must subtract the value of exports of manufactures, from the sum of the values of manufactured goods produced at home, and those imported.

The amount of woollens manufactured in the Province is estimated at being worth Rs 4,000,000. Taking the price of the wool utilised for manufacture at Rs 48 per mand (as above under Production, page 77), the value of the 45,457 mands of this superior imported wool used in manufactures works out at Rs 4,363,972, allowing for the manufactured article twice the value of the raw wool (Rs 2,191,936).

The value of the manufacture article is taken at double the cost of the raw material on the

0 wool grown outside the British Rajah.
basis of the following instances:

According to the estimates of production for Scotland in the Wool Year Book for 1922, the 30,000,000 lbs of raw wool valued at £1,593,750 (page 74 c) turns out manufactured goods worth £3,000,000 (Wool Year Book '23, page 76). Thus it doubles its value by being manufactured.

According to the trade figures for the Panjab (page 64), the export by rail or river of 32,109 maunds of manufactured goods is stated as being valued at Rs 3,304,311 i.e. Rs 145 per maund. The wool used in the large mills in the manufacture of these stuffs is all imported from outside of India through the ports (being 4,757 mds worth Rs 325,304 i.e Rs 68/10/- a md) and is worth Rs 3,24,311 l.e. Rs 145 per md.

This again shows that mill manufacture doubles the value of the raw material.

By another, more elaborate method, we come to the same estimate, thus removing all doubts as to its correctness:

i. The mills use 18,393 maunds of wool (page 76 c)

Out of this 4,757 mds worth Rs 325,304 is imported foreign wool, working out at Rs 68/10/- per md (page 63), which when manufactured will be worth twice as much, i.e., Rs 650,608 -- according to the above deductions.

The rest of the mill manufactures are made from home grown or desi wool, costing Rs 28/10/- per maund (page 65), using 13,536 maunds of wool. This raw wool worth Rs 377,468 doubles in value after being manufactured to Rs 754,936.

Thus the total of 18,393 mds of raw wool used by the mills values when manufactured at Rs 1,407,334.

ii. The cottage industry utilizes 27,164 mds of raw wool (page 76 c), which is practically all home grown.
or imported from neighbouring countries, and which is valued at Rs 28/10/- per md (page 65). The process of manufacture, here, is slow and laborious, involving a long time, so that the value of goods after being hand-manufactured increases fourfold, not double the cost of the raw material as in the case of mill manufactures.

Taking the instance of tweed manufacture in Scotland, we find that on the average a yard of tweed uses 1 lb of wool, this wool when worth 11 d a lb (22 lbs of wool worth 2 1/4/-), fetches after being manufactured into tweed 3/10 per yard in the open market -- though the poor worker sells it to the middleman for 2/10 a yard. So that 3/10 is equal to about 4 times 11 d the price of raw wool.

Another instance from the Panjab is of a blanket worth Rs 8, using local wool 2 1/4 seers, valued at Rs 1 13/- at the rate of Rs 28/10/- per md or Rs -11/6 per seer (p 112). Here also Rs 8 (price of blanket) is equal to about four times the cost of the raw material (Rs 1 13/-).

Taking this as our basis, cottage manufactures value at Rs 3,110,278 -- (27,164 md) (Rs 28.10:0 price) (4) quantity per md wool

The total therefore of mill (Rs 1,451,434) and cottage (Rs 3,110,278) manufactures from 45,457 maunds of wool amounts to Rs 4,542,712, very nearly the same as estimated by the other method on page 77.

To estimate the home consumption, the method works as follows: (a plus b) - (c) where

a) Woollen manufacture in the Panjab worth Rs 4,000,000.
b) Imports of manufactured goods Rs 1,280,739 (page 64)
c) Exports of manufactured goods Rs 3,317,331 (page 64)

Consumption is thus Rs 2,063,407 -- like Scotland the Panjab exports half the value of the total manufactures.
and consumes the other half within her own boundaries.

**For comparative purposes a pound sterling is taken as equal to 15 rupees, while a maund is 68 lbs, and a seer about 2 lbs.** As the aim of the thesis is not a comparison of details, but only the tracing of the broad general tendencies in woollen economics, the substitution of the values of one country in terms of another has not been carried out to any very great extent.

The area of the Punjab under consideration, though three times the size of Scotland, according to the estimates does not produce as much wool as Scotland. The reasons are:

1. In Scotland all the sheep are registered in the census and the estimates are fairly correct; while in the Punjab the estimates take into account only the large registered flocks, altogether leaving out the numerous owners of few scattered sheep; besides the fact that the census is taken in February, when the migration of flocks to higher summer quarters has already started, leaving few flocks in the British territory. For practical purposes, at least for the present, we must rely on the registered statistics, as giving a fair general view of the real situation.

Scotland is a cold country and necessitates the

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1. Page 79. Overleaf

Report on Home Industries in the Highlands and Islands by the Department of Agriculture Scotland. Page 186. Also refer thesis page 166, where use is made of slightly superior wool, and also price is taken for 1924, and
the wearing of woollen clothing throughout the year; while in the Panjab, though it is very cold too, it is so only for half the year, thus needing as much cotton as woollen clothing.

The value of money though taken at Rs 15 to the $ does not necessarily depict the true situation. Scotland is an industrial country, with a high standard of living; cheap necessaries for efficiency but expensive necessaries for life, thus giving to money a very low real value. The Panjab is mainly an agricultural country self sufficient in many ways, having small circulation of money, low money incomes, but cheap food, clothing, and shelter, thus possessing money with a much higher real value.

For all these reasons a wholesale substitution of values for comparison of detail would not be fair to either country.

Both countries consume half the woollens they manufacture, exporting the other half to other countries. In both cases the value of mill manufactured goods is double the cost of the raw wool, while in cottage manufacture the value becomes fourfold.

The figures for the comparison of the volume of trade are not quite complete, as, in the case of Scotland, land trade across the Border by railway is not taken into account; while in the Panjab many transactions are by barter and are not included in the trade figures on pages 63 and 64. Still, comparing the total stated value of imports and exports, we find that the trade per head is much greater in Scotland (the smaller country) than in the Panjab. Taking just the woollen industry
the total trade is:
Scotland £ 3,041,170 for 4,883,497 persons (12 sh per head)
Panjab Rs 12,446,639 for 20,365,024 (10 annas or 10d) per head

The density of population per square mile is much the same in the two countries, being 160 for Scotland and 187 for the Panjab (page 2), and yet the trade per head is so much greater in Scotland (14 times in just the woollen trade alone). This may seem strange, but is a perfect instance of the workings of the rules of commerce. The density of population being the same, "the trade per head will generally be the larger in the smaller country" says Prof. Marshall in his 'Industry and Trade' on page 23. The following reasons may be stated:

Scotland, the smaller country, has less varied resources: therefore, producing fewer things within her own borders, she depends largely on external markets for her raw materials. Her industries depend largely for their raw materials on imports, for which she pays in service by exporting mainly manufactured goods. Thus, every transaction being recorded, the trade per head comes to a high figure. The Panjab on the other hand, is and has been to a large extent, self-supporting. She can easily supply her most pressing needs within her own frontiers, possessing facilities for the production of a great deal more; with simple wants, and indigenous catering of manufactures, she has fewer transactions with other countries. Her exports are mainly raw materials, and imports in the form of manufactured goods. Hence her recorded trade per head is small.

Secondly, Scotland is a smaller country with a much larger frontier, so that the distance of her people
from the foreign markets is not as great, as in the Panjab. She is surrounded by sea on three sides, and sea transport is the cheapest method of carriage. So that she has a very good chance of carrying on a large trade. The Panjab being so much larger, has a smaller frontier proportionately; the distance of her people from her chief markets is great -- her nearest port, Karachi, being about 300 miles away. She is surrounded by land on all sides, the mountains in the north and the desert in the south making her distance from foreign markets greater, and necessitating land transport which is an expensive affair. All these drawbacks result in a smaller foreign trade per head.

But the Panjab being the larger country has great possibilities for development. Once the methods of transport are improved, she will have a better approach to her own large markets, and quicker means of communication can be installed. She can offer variety and yet specialise. Her larger area gives her greater facilities for the development of those industrial districts, where concentrated specialisation can be carried to its highest extent.
CHAPTER THREE.

THE COTTAGE INDUSTRY.

1. Introduction. 84

2. The Methods of Manufacture. 90

3. The Articles Manufactured, and the Condition of the Industry. 105

4. A Brief Section on the Factory Industry. 113
Chapter Three

COTTAGE INDUSTRY.

THE MANUFACTURE; METHODS AND MATERIALS

These are the gifts of art, and art thrives most where commerce has enriched the busy coast. He catches all improvements in his flight, spreads foreign wonders in his country's sight. Imports what others have invented well, and stirs his own to match them or excel. This reciprocating each with each, alternately the nations learn and teach.

Cowper.

1. INTRODUCTION.

This section as no other shows the value of international commerce as an important element in the progress of the arts and crafts of nations. Through commerce, one nation teaches another; merchants bring the wonders of one nation to the shores of another, and spur her on to match them or excel. It is thus the pupil becomes greater than the teacher, and able to
guide him in turn. The history of cloth manufacture is a story of how Britain learnt the art of pagan hands, through the instrumentality of the Romans, and how after accelerating the speed of the methods of production she is going back to introduce the improvements in the static east.

The manufacture of cloth is no new invention of the modern world, but was known to the ancients long before the Christian era. According to certain records, of 2000 B.C. the art was very highly developed in most of the eastern countries; Persia was famous for her shawls and carpets, China for her silk, Kashmir for her shawls and woollens, and India for her cottons and muslins. The very names of some of the fabrics are derived from the places where their manufacture first originated, and the following for example are all eastern -- Nankeens, Balasores, Madrasses, Bengalas, Leachores, Bagdad lace, Japan brocades, Cashmere shawls, and Persian carpets. It was observed even as late as 1820, by William Ward of Serampore, that "no modern nation can vie in the delicacy and fineness of cloth manufactures with Hindoostan."

The art of weaving was entirely unknown in Britain, previous to the Roman invasion. After the Romans had obtained a footing in the country, they established a manufactory at Winchester for clothing the army, and for making cloth for their Emperors. As it is stated "thus they taught the art of weaving and the culture of flax."

The use of the word 'wear' for putting on clothes, is derived from the word originally used for "wool", and shows that woollens were the first textiles to be subjected to the process of weaving for making clothes.
In Sanskrit the word 'warn' meaning to wear, was originally used for the wearing of woollen clothes, called 'urm', but now used for the wearing of any textiles.

Sanskrit  warn -- वर्ण, to wear; urm -- उर्म, wool.
Panjabi  worna -- वर्न; won -- उर्म, wool.
O H German  werihan  ; wolla
Anglo Saxson  werian  ; wull

Thus we see how the methods of cloth manufacture, and even the terms relating to them have been introduced from the east into Europe, where they have received little improvement in the actual processes themselves. The great contribution of the west has been the acceleration of the speed of work in all departments. The modern powerloom for example, is just a more complicated, quicker, heavier, and more perfected from of the old handloom in use from time immemorial.

During the last century cloth manufacture has undergone a revolution in speed in the west -- more improvements and changes having taken place in this short time than during hundreds of previous years. The inventions were in the first instance in the field of cotton, but were gradually extended and adapted to woollens. Although they were due to English genius, Scotland deserves the credit of having applied them successfully. An extract from the Statistical Account of Scotland for 1845, relating to Kilmadock in Perthshire (the centre of the woollen and worsted trade of the west) says that a Mr Smith of that parish "has completed an adaptation of Mr Crompton's mule jenny to mule spinning in wool."

\[O \text{ Next page.}\]
of the nineteenth century power driven machinery came into general use, since when a number of other improvements have been effected; but for our purpose there is no need to go into the details.

The chapter is devoted to the cottage industry, the factory industry however had incidentally to be referred to; in order to show that cottage methods have merely been quickened by these modern inventors and are being taken back to the east, as the contribution of the west:

Tis this reciprocating each with each,

Alternately the nations learn and teach.
At the cottage stage of industrial development home grown wool is manufactured into cloth by means of very simple crude and ancient implements. In the Panjab the greater part of production is still carried on in this way except in a few large factory towns. In Scotland owing to the great improvements in the methods of cloth manufacture during the last century, the prevailing methods employed are the latest, up-to-date, and most modern, except in a few outlying districts in the north of the mainland, the Hebrides, and the Islands of Orkney and Shetland. Here, the methods of production are very much like those prevalent in the Panjab, thus serving as interesting relics of the once generally prevailing system over the whole of Scotland; and also as links between the old and the new, east and west, furnishing living illustrations of history.

Preliminary processes:

It is the custom of owners of little flocks, both in the Panjab and in Northern Scotland, to wash and shear the sheep themselves. The women of the house then take charge of the wool, sorting the black from the white and the coarse from the fine. This wool is washed with soap and water, and after being dried, hand picking has to be resorted to for the removal of burrs and thorns.

For worsted manufacture long fibres are combed with small hand-combs, to make them straight and parallel; while for shorter wools hand-cards are used. This is a very slow process, taking about a third of the labour expended on all the processes combined.
In Scotland even in these out-of-the-way places hand-combing and hand-carding is not usual now, though the present generation still remember it as part of their early home life and are preserving these cards and combs as relics.

The operation has now been entirely taken over by the small carding factories, met with in every district in the north of Scotland where woollen manufacture is of any consequence; they are small, fitted with a machine or two, worked by the owner, manager, and operative all rolled in one, catering for the market in the immediate neighbourhood only. In the Hebrides, the Island of Harris alone possesses two carding mills; while in Lewis there are two woollen mills at Stornoway, with both a spinning and a carding plant. The cost of carding at the mill is 5 d per lb, whereas spinning and carding combined cost 8 d per lb. The natives bring their wool in sacks, which after being separately carded, are handed back to the owners.

In the Panjab little carding is necessary as the wool is usually very short stapled, though for the longer fibres both cards and combs are used. When a large supply of wool is required, as for carpet making, the 'dhunki — ہڈکی' or the 'penja — پنجن' is used. This is a heavy bow, suspended string downwards from the roof, with the string resting some six inches from the ground. The bow is held in the left hand with the string partially buried in a heap of wool, the operator being in the usual squatting position. A pile of wool is placed under the string, which is then depressed until it is well in the wool, when it is let go.
The Penja at work. Lahore. Winter 1924. 

The string is made to vibrate violently, either by hand or by being struck by a dumb-bell-shaped instrument called ‘muttiya’. This vibration disintegrates the wool, separates the fibres, and frees them from dirt and rubbish.

This cleaned wool reduced to silver in the two countries by such different methods, is in the Panjab.
made into balls of about two ounces (one chatak) called 'puni -- ' in readiness for spinning, while in Scotland it is stored up in bunks of a special weight.

**Spinning and Warping.**

*Fig. 1, Fig. 2, Fig. 3*

Different forms of the 'dherna'  

It is a wooden needle 16 inches long, with a fairly heavy wooden base, made either circular (as in figures 1 & 3) or with two pieces crossing at right angles (as in fig 2) with a wooden axis rising perpendicularly to this base.

A portion of the 'puni' or ball of wool is drawn out and held to the upper part of the instrument; the 'takli' is then spun round in the hand, and when it has got firm hold of the wool, is let go (being allowed to hang for figures 1 and 2, but to spin like a top rested on a disc for fig. 3), supported by the thread which it is spinning; the right hand of the operator
keeping up the rotary motion, while the left regulates the draft of the wool. When the thread gets so long as to bring the 'takli' or spindle out of reach or to let it touch the ground, the draft of wool from the 'puni' or ball is stopped, and the piece that has been spun is wound round the 'takli'.

Spinning in the Himalayas with the 'dherna'.
Simla 1924.

In the hills the 'takli' is in general use by all sexes and ages, because it is cheap (costing about 6 annas, 6 d) convenient and portable. It is not unusual to find people spinning even while walking on the road, or minding their flocks.

b). THE 'CHARKHA' - - OR SPINNING WHEEL
of the Panjab is worked entirely by hand, and is commonly used in all parts of the Province. It is an improved form of the 'dherna', where it is made to spin by means of a wheel, thus ensuring regularity of movement, and consequent fineness and evenness of thread.

The 'charkha' may well be described as in Johnstone's Monograph on Wool - - "It is formed of two..."
parallel discs, the circumferences of which are connected by threads, and over the drum so formed passes a driving band also made of thread, which communicates a rapid motion to the axis of the spindle. The end of a 'puni' is presented to the point of a spindle, which seizes the fibres, and spins a thread, the 'puni' being drawn away as the thread forms as far as the spinner's arm will reach. Then the thread is slackened and allowed to coil itself on the body of the spindle, until the spindle is full, when it is removed. The spindle full of woollen thread is called 'challi' or 'muska'.

Girls spinning and making 'punis' in the Panjab. (Photo taken by M. N. M., Lahore, January, 1933.)
The spinning wheel used in Scotland at the present time in the Islands is slightly improved; making use of the feet to rotate the spindle, thus leaving both hands free to manipulate the thread.

Spinning in the Hebrides. Tarbert 1936.

This is a Norwegian wheel, and was introduced in these Islands by the manager of the whaling station at Tarbert, which until very recently was owned by a Norwegian company.

In Scotland and the Panjab, as in ancient Greece and Rome spinning has always been a woman's occupation, carried on in her leisure time, usually for home consumption or as a means of earning a supplementary income. The process is very slow and tedious, taking about half the working hours expended on all the operations, as against a third on the hand-carding (Report on Home Industries in the Highlands, page 56).

1. In the Panjab, wool carding and spinning employ 1244 women to every 1000 men -- Census of India 1931, Panjab and Delhi, Part I, page 378.

2. Photo taken by Wilkie, June 1926.
The spun yarn is then doubled or trebled according to the requirements, and twisted either on the wheel or on a separate spindle on the same principle as the spinning with the 'eherne'. After being twisted the yarn is wound on to an 'H' shaped wooden frame called 'ateran' for making into skeins or 'attis', of a special length. The next process is to wind the wool on reels or 'uras', on the spinning wheel (just like thread is wound on the bobbin of a weaving machine). Warping and sizing are the next two processes before the yarn is quite ready for being woven into cloth.

Wearing:

A handloom is a sufficiently common sight and does not need an elaborate description. The weaver while at work is very busy; to keep the handloom going he is required to throw the shuttle across with one hand, push the threads close to one another with the other, and with both feet he has to work the treads which alternately open and close the warp threads. Hand weaving in Scotland is gradually declining; for example, a village near Paisley has only 20 men working now whereas about there were as many as 830.

It is commoner in the north and in the Islands, where the modern methods have not yet penetrated. The loom is usually fitted up in one of the small rooms, being about three feet raised from the ground, to enable the weaver to sit on a stool while working.

The handloom of the Panjabs is built on the same model, the warp is called 'tani — Doctrine', and the weft 'peta —  Doctrine'; the shuttle or 'barani —  Doctrine' is very similar to the old boat shuttle used in Europe, the yarn for the weft being wound on hollow spools which

\[\text{1836} \quad \frac{\text{A}}{} \quad \text{there were as many as 830.} \]

(according to Mr. W. Donald — for Rev. Mr. Donald Historically, 1845)
are fitted on to an iron pin or 'salai' running along the centre of the shuttle. The climate of the Province is neither so wet nor so cold as that of Scotland, and allows of the work being carried on in the fresh open air under the shade of the trees. The loom is fixed on the ground, and the weaver sits with his feet in a pit about 18 inches deep to allow the heddles free play.

Weaving in the Panjab. 1924.

The following quotation is very applicable to him:

Between two trees thy web was hung,
Thy cloth beam nearly touched the ground,
While birds enchanted sweetly sung
And fruits delicious grew around.
Thou breath'd the freest air of heaven,
The sun unclouded gave thee light;
No lamp nor gas to thee was given;
Through day thou worked and slept at night.

Brien Dhu O'Farrel.
(Art of Weaving, Gilroy)

Photo taken by W.B. January 1924.
Waulking or Finishing:

The next process is that of waulking or thickening, also called waulking probably from its chiefly being affected by the feet. The web being beaten wet makes the fibres interlock, and the texture firmer. In the larger mills and in a number of places in the north the operation is performed by machinery; but it has been found that machine waulking although quicker and cheaper is very good for textures of longer fibres; on shorter fibres it is apt to over-do the work, turning out a texture hard, stiff, and heavy; while the old process secures a fabric soft, supple and sufficiently dense to be wind and weather proof.

In the Punjab, except in the few large mills, the process is done on the old style. A little oil is poured on to the cloth, which is then dipped in hot water in an earthen trough; the cloth is taken out and placed on a flat stone and kneaded (goundhana) for some time with the hands, and as the operators get warmed up to the job, the feet are also used, the workers all the while chanting songs to suit the rhythm of the movement.

In Scotland the process has a charm all its own -- "In the Highland districts women make use of their feet to produce the same result, (felting), and a picturesque sight it is to see a dozen or more Highland lassies set around in two rows facing each other. The web of cloth is passed round in a damp state, each one pressing it and pitching it with a dash to her next neighbour, and so the cloth is handled (footed ?), pushed, crushed, and welded as to become close and even in texture. The process is slow and tedious, but the ladies know how to beguile the
time, and the song is passed round, each one taking up the verse in turn, and all joining in the chorus. The effect is very peculiar and often very pleasing, and the waulking songs are very popular in all the collections. It is often the occasion of a little boisterous merriment and practical joking, for should a member of the male sex be found prowling near by, he is, if caught, unceremoniously thrust into the centre of the circle, and tossed with the web, till bruised with the rough usage and blackened with the dye, he is glad to make his escape from the hands of the furies, As the work progresses they get warmed up and the songs become livelier and livelier until the fury of the song reaches such a pitch that "you would imagine a troop of female demons to have been assembled," says T. Pennant in his 'Tour in Scotland and Voyage to the Hebrides' 1772. This description is equally applicable even today to the process on the West coast and the Northern and Western Islands.

Dyeing

Notwithstanding the apparent simplicity of some of the processes in dyeing, it is well known that there are certain secrets connected with the trade known only to the initiated. Formerly in Scotland as well as in the Panjāb, only indigenous dyes were used; but now imported aniline dyes are used in great quantities, as they are cheaper, brighter and more standardised.

In Scotland about 48 different plants are utilised for making the indigenous dyes for the tweeds, a detailed list of which with their botanical names is

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given in the Report on Home Industries in the Highlands and Islands, page 194. Use is made of the roots of iris (black and grey), dock (black), rue (white), ash (yellow), walnut (brown), water lily (brown), barberry (orange), and other berries. Different kinds of lichen (called crottle in Gaelic) are used for various shades of brown, crimson, red, and scarlet. The barks of the oak, the birch, and the whin, and the leaves, flowers and berries of different plants are all made use of in making different dyes.

Similarly in the Panjab a number of plants are used for procuring different dyes, though they are very different to the ones used in Scotland. The rind, the root, and the flowers of the pomegranate are very generally used, besides the tezu flower, saffron, turmeric, mango, kikar bark, akalbir roots, kesu flower, and mendhi.

It might be of interest to mention the Indian and English names for the same dyes:

<table>
<thead>
<tr>
<th>Black</th>
<th>siah or katti</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown</td>
<td>bhura</td>
</tr>
<tr>
<td>Blue</td>
<td>nila</td>
</tr>
<tr>
<td>Green</td>
<td>harra</td>
</tr>
<tr>
<td>Purple</td>
<td>uda</td>
</tr>
<tr>
<td>Scarlet</td>
<td>gulianari</td>
</tr>
<tr>
<td>Yellow</td>
<td>zard</td>
</tr>
<tr>
<td>Orange</td>
<td>jogia</td>
</tr>
<tr>
<td>Red</td>
<td>lall</td>
</tr>
<tr>
<td>Lilac</td>
<td>nafarmani</td>
</tr>
<tr>
<td>Light blue</td>
<td>abi</td>
</tr>
</tbody>
</table>

Dyeing in the north of Scotland and in the cottages of the Panjab is usually done by the manufacturers so that the yarn made of the wool which was in front.
themselves. The dyeing is done in the yarn, by boiling the material in huge vats full of the colour, the stuff being occasionally stirred. At times the material when expensive is dyed in the cloth by professional dyers, who charge according to the value of the article and the cost of the dye.

OTHER WOOLLEN MANUFACTURES:

Namdas:

Namdas or felt are made of unspun wool. The process of manufacture is simple — the wool after being washed is spread on a mat in uniform layers, of the thickness of the 'namda' wanted; which after being sprinkled with 'ritha' water (soap nuts) is carefully rolled up and subjected to pressure by kneading for some hours. The mat is then upturned and subjected to the same process. In the case of coloured 'namdas' the pattern is laid out on the partially felted namda, in the required colours and felted into it; the dyes used for making these designs are not fast, so that the 'namdas' cannot be washed.

 Carpets:

The method of carpet weaving in the Panjab is peculiar, though simple, and may be described as in Baden Powell's 'Handbook of Manufactures and Arts of the Panjab' — "...The warp is however, not placed flat on the ground but is worked erect being attached at either end to two rollers which are supported at the extremities of two upright poles,...the process of weaving consists in dextrously twisting short lengths of coloured wool into each of the threads of the warp in a straight line, so that the two ends of the wool stick out in front. When
a whole line is completed (the colour chosen and regulated by the pattern), the projecting ends of wool are clipped to a uniform length, and a single thread of wool is run across the breadth of the carpet between the threads of the warp, just as in ordinary weaving; and the threads of the warp are crossed as usual. Then another row of ends of wool is put in the same manner, another line of wool passed between the threads of the warp to keep the woollen tags in their places, and so on. In Scotland the process is the same, but economical and quicker being done by machinery in factories especially at Glasgow.

Hosiery and Knitting:

Some knitters use all hand spun yarn, others all mill spun, or again others change from one to the other according to requirement. After being knitted the goods have to be finished and dressed — "strictly speaking the finer goods are never washed. A thin lather of boiled soap and water is made, and the article is plunged into this. It is then stripped through the hand, but is
never rubbed or wrung. When cleaned it is rinsed in water without soap, and is then stretched to dry, generally upon a specially prepared framework. The hosiery industry is a one man business — a cottage industry — both in Scotland and the Punjab, but since the war there has been an increasing demand for knitted goods and a number of factories have been started. Hand knitted goods wear better than machine knitted goods and allow of a good deal of individuality and variation. To ensure a really good result, care must be taken to use the right size of needles for the wool and suitable wool.
Dividing up the articles manufactured, on the basis of expense of material and consequent methods of production, the woollen industry falls into four more or less distinct groups.

A). The case of articles requiring cheap materials and simple instruments, where the entire process is worked at the risk of the producers in their own homes. For example, the namda, the patto, the blanket, and the hosiery industry in the Panjab, and the tweed and hosiery industries of the Hebrides and Northern Islands.

IN THE PANJAB:

A considerable part of the industry in the Panjab is carried on in this manner. MANDAS or felt are used for bed and floor rugs, horse cloths and linings for ice boxes. They are produced in great quantities in Amritsar, Shere, and Dera Ghazi Khan, costing from 12 to 14 annas (1/- to 1/2) a seer (2 lbs), for the plain and Re 1/8/- a seer for the coloured.

HOSEIERY AND KNITTING was introduced into the Panjab by the wives of the Kashmiri settlers during the nineteenth century. The industry not only added to the combined income of a family, but also afforded a healthy pastime for the pardanashin ladies of Kashmiri families. As a business undertaking it is carried on at Ludhiana, Apra, Phillaur, and Bilga. A few factories have also been recently started in places like Ludhiana. During the war attention was concentrated on the supply of army
requirements; the result was that China and Japan captured the market for fancy goods. So that since 1918 about 70% of the manufacturers have taken to working with artificial silk yarns. The report on the industry in 1925 suggested improvements in dyeing, designing, and marketing. Since 1926 a Government Hosiery Institute has been started at Ludhiana for training and information and is doing valuable work.

The small scale production of CARPET an (kalin - کلن) is carried on in Kasur, Amritsar, Multan, Lahore, Kohat, Senna, Shahpur, and Noshiarpur. They are made of spun wool and are of three types: the small carpets made in Multan, characterised by their individuality of design and colour, costing from Rs 6 to 14 each; the 'nakhir' a kind of woollen rug, manufactured in Senna and Kohat, woven on the principle of carpet weaving except that the loops formed on the top of the rug are not cut; the 'asen' is a small rug from $\frac{1}{2}$ to 3 feet square, used on ceremonial occasions. It is made in Ludhiana, Lahore, Shahpur, and Noshiarpur, costing from 14 annas to Rs 5/8/- each. The condition of the industry is stable, because the weavers depend on their own capital; yet great assistance could be rendered by cooperative societies through keeping the weavers in touch with the markets and the changing fashions.

The term BLANKET covers a number of woollen fabrics, such as lohi - لہی, kambal - کمبال, salim - سالم, bhura - بھورا, pattoo - پٹو, and garbi lohi - گری لوہی. Blankets are woven by simple weaving, and the industry is scattered all over the wool producing districts of the Punjab, while pattoo manufacture is a speciality of Kangra. Although "taken generally it may be said that the quality
of the blankets is poor, but it may be doubted whether any western race with the like appliances would produce anything so good" (D.G. Johnstone)

SCOTLAND:

The tweed and the hoslesey industries of the north of Scotland are generally carried on in the cottages of the workers, as bye occupations in conjunction with some other main industry. SHETLAND HOSLEERY AND KNITTING have long enjoyed a high reputation. The wool is used in its natural colours (100 varieties of shades), and workers show great skill in blending these shades. The peculiar silky character of the locally grown wool, renders it appropriate for all the uses where softness of texture and finish is an advantage. FAIR ISLE HOSLEERY is dyed in bright colours by natural vegetable dyes. It is of great historical interest as being the survival of what was perhaps the earliest knitting industry in Scotland, and the only place in Britain now where these types and designs in knitting have been preserved. The TWEED INDUSTRY of the Hebrides, and the west coast, is very much like the Indian "pattu", but the tweed is more expensive and not so soft.

A considerable quantity is made for local use, and some for sale to the local merchants and middlemen. The entire operation from beginning to end is carried on at the risk of the producers.

B). In the case of expensive articles, manufactured with simple instruments, and also in cases where standardised production is required, the commercial middleman contracts to buy the finished product, while sometimes supplying the raw material.
The PASHMINA AND SHAWL industry comprise the manufacture of chuddars, rumals, doshahas etc; long cloth or serge of plain colours (pashmina alvan); jamewars or patterned alvans, usually striped; bhables, garbi or patti cloth; nakli pashmina (imitation pashmina); pattoo, and malida (felted alvan). For the expensive articles the wool is imported by merchants through Sial, Kashmir, and Bushire and supplied to Ludhiana, Kangra, Amritsar, Rewalpindi, Gujrat and Rohiarpur -- the chief seats of artistic manufacture of woollens in the Province. The pashmina industry in the Panjab dates from the early part of the nineteenth century; when extreme famine drove numbers of artisans from Kashmir to seek a home in the Panjab, where they greatly flourished under Raja Ranjit Singh. After the annexation of the Panjab in 1844 the shawl trade was very prosperous owing to the widening of the market; at one time at Amritsar alone as many as 4000 looms are said to have been at work on pashmina weaving. These shawls continued to be made on a large scale until the Franco-German war 1870, after which the demand rapidly decreased. The causes of the decline were, firstly, the unequal competition of the Panjab shawl made with simple instruments, against the German shoddy, the French cheap machine made shawls, and the Paisley imitation of India shawls (woven and embroidered by machine) -- the stuff thus produced was just as good but the embroidery was greatly inferior. Up to 1830 all Kashmir yarns used in Scotland were imported from France, but by this time the manufacture of Kashmir shawls had become so important an industry, that the Board of Trustees for the Encouragement of
Arts and Manufactures in Scotland, offered a premium of £300 to the first person who would establish in Scotland the spinning of Kashmir wool on the French principle (which had been directly learned by them from India). Secondly, the lowering of the standard of business honesty owing to there being no control of industry since the annexation of the Panjab, led to the adulteration with pasham of Rampur wool at Ludhiana, and Kirmani wool at Amritsar, thus detracting from the value of the shawls. Thirdly, the fear of competition from the new centres of production in the Panjab, made the Kashmir authorities to prohibit the export of wool, so that the articles manufactured from the limited supply of poorer wool from Simla, Kulu, Peshawar, and Kirman were naturally inferior. Fourthly the influence of the change of fashion in foreign markets, and the demand for new designs and new colourings, resulted in a contraction of the market for the article. Lastly, the lack of capital and the inability of the manufacturers to buy up-to-date machinery -- the effects of which were cumulative, the weavers underpaid, ignorant, and unorganised, fallen into a monotonous rut, with neither the leisure nor the means to effect improvements, further lowered the standard of work.

Since 1870 the decline has been gradual but sure, though the war had a stimulating effect on the industry by stopping the import of the cheap inferior foreign articles. There are plenty of actual instances illustrating the decline; the trade once flourishing at Ludhiana, Amritsar, Sialkot, Sabathu, and Nurpur is now in a very low state -- at Sabathu there are barely two or three weavers out of a colony of 300 a quarter of a century ago; Nurpur, once a renowned centre of the
manufacture can boast of no more than Sabathu owing to
the hardness of its water. Shawl weaving, particularly
in Amritsar, has been replaced by carpet manufacture, which
now is a very important branch of the woollen industry
of the Panjab. Still the manufacture of pashmina piece
goods continues, but is confined to alwans and serges,
curtains and ordinary shawls, especially at Ludhiana
and Amritsar. The merchants import the pasham, and get it
spun by women paying them from 6 pies to one anna and
six pies per tola (Rs 2:8:0 to 7:8:0 per seer). This
yarn is then handed over to the weavers, who are mussalmen
Kashmiris settled down in the Province. Pashmina weaving
with these simple instruments requires special skill,
and a weaver can earn from Rs 3 to Rs 5 a day. The
embroiderers or 'toppagars' are closely connected with
the shawl weavers, whose manufacture they finally prepare
for the market, by working up the borders with coloured
pasham or imported woollen yarn. Their charges vary
according to the material and the quality of the work
required, and the size of the shawl to be embroidered —
e.g. a silk shawl 76 by 45 inches costs for embroidery
alone @ 5 at Ludhiana.

In the larger centres of BLANKET MANUFACTURE
at Panipat (producing 46,000 blankets annually), Minawali,
Lahore, Noshriarpur, and Hisar the trade is solely in the
hands of Hindu capitalists, who purchase wool from the
herdsmen during the shearing season at the rate of Rs 8 - 13
per maund, selling it to the manufacturers at nearly
double the cost; the manufacturers being poor purchase
the wool at high rates on the instalment system, thus
being obliged to market the finished article through
these merchants too. Often though not invariably the
raw wool is supplied by the merchants contracting to buy the finished article so as to insure a regular and steady supply. Before the war the blanket industry was fast declining owing to the importation of cheap foreign shoddy material. Since the war the industry has revived again, and blankets have been made in great numbers for military requirements. By the end of 1918 the supplies of blankets from all sources were 300,000 per month, practically three times the number supplied in any month before June 1917. According to the Indian Munitions Board Industrial Handbook for 1919, it is the opinion of experts that the blanket industry has been exploited to the utmost producing capacity of the hand looms, and existing means of manufacture.

It is interesting to make an analysis of the different elements in the cost of production of a 'lohi' and a blanket. In the case of a 'lohi' weighing 5 seers worth Rs 20 in the market:

a. Raw wool 6 seers @ Rs /11/6 a seer (p 65) .... Rs 4/-
b. Cost of cleaning (wages) .... Rs 1/6/-
c. Cost of spinning @ 14 annas a seer .... Rs 4/-
d. Cost of weaving @ Rs 1 per seer .... Rs 5/-

Total .... Rs 14/1/-

So that the contracting middleman (when he does not supply the wool) by selling the lohi at Rs 20 when it has cost him Rs 14 makes a profit of Rs 6 -- 45% on the capital invested. Another fact observable is that the cost of the raw material increases fourfold when it is marketed after being manufactured -- the lohi worth about Rs 20 contains raw wool costing Rs 4/.

Consider next the case of blankets whose prices vary from Rs 3 to 16 each, according to size and texture.

O. Normal civilwadi -- price generally prevalent in 1924.
Take an average blanket made at Noshipur, weighing 2 scores and fetching Rs 8 :—

a. Raw wool 3½ scores @ Rs 11/6 a score .... Rs 1 13/-
b. Cost of cleaning @ an anna a seer .... Rs 1/2/-
c. Cost of spinning @ 14 annas a seer .... Rs 1 12/-
d. Cost of weaving @ 12 annas a seer .... Rs 1/3/-

Total .... .... .... .... Rs 5 3/-

The cost of weaving is less per seer for the blanket, as the texture is coarser and harsher. The blanket costing Rs 5 3/- to manufacture, is sold in the market for Rs 8, giving a profit of Rs 2 13/- at the rate of 39% on the capital invested. Besides that here also we find that the market price is a little over four times the amount spent on the raw material — blanket worth Rs 8 contains raw wool worth Rs 1 13/-. Comparing the two we find that the profits are higher in the case of the lori, due to the fact that it is an expensive article generally used by the upper classes, the market catered for is small, and production limited. Therefore the prices are higher and consequently the profits too. The cost of the raw material in both cases increases three to four fold after the article has been manufactured. The profits at first sight seem colossal, but it must be remembered that they include — the interest on the capital outlay, which is often very high, sometimes being even 75% (an anna in the rupee per month); the wages for superintendence and management; and sometimes the outlay on machinery and an allowance for its depreciation. So that considering all these things the profits are not too high.

SCOTLAND:

In Scotland the greater part of the cottage industry is at this stage a paid industry.

D. Rasell investigated — customary prices prevailing 1914.
For the expensive articles and special orders, the voluntary associations and firms generally supply the materials and the implements, more often however there is a standardised demand for particular articles in special designs and colours. For these the firms and associations purchase the raw material, either supplying it to be worked on, or selling it to workers at almost cost price.

Quite a variety of articles are manufactured by these small producers –— hose, stockings, gloves, veils, underclothing, shawls, blankets and tweeds. Although woollen manufacture is the main form of cottage work, it takes a number of other valuable forms too, as will be seen from the following extract:

We learn to crochet, knit, cane chairs,
Make hats and trim them, if one cares,
And sell them too for one's own profit
So making cash and pleasure of it.

We also make wool rugs and pillows,
Baskets of raffia, cane and willows,
Gloves, jumpers, such smart socks and slippers
And frocks for grown-ups and for nippers.

The principal manufactures will be dealt with historically and geographically in chapter IV. Here it

would be interesting to make a study of the elements in the cost of production of tweed. Take a yard of tweed the retail price for which in the larger markets is 3/10 a yard, in which according to the estimates in the Report on Home Industries in the Highlands and Islands (p 189), is one lb of raw wool to every yard of tweed:

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw wool 1 lb @ 1/2 a lb (p 74)</td>
<td>1/2</td>
</tr>
<tr>
<td>Spinning and carding</td>
<td>-/3</td>
</tr>
<tr>
<td>Weaving</td>
<td>1/-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2/10</strong></td>
</tr>
</tbody>
</table>

Thus the contracting middleman when he does not supply the raw wool but merely superintends the operations right through, by selling at 3/10 what has actually cost 2/10 makes a profit of a shilling i.e. 33 1/3%. This estimate is fairly correct, as it tallies with that of the Report on Home Industries in the Highlands and Islands (p 53) — in comparing the price paid for the goods as they leave the place where they have been produced, with retail prices in London or some other large town, the latter exceed the former by about 33 1/3%. At first sight it may seem a fabulous sum, but it must be kept in mind that it includes the profits, the wages of superintendence, the expenses of transport, and the cost of advertising. The next fact made obvious is that the retail price of the finished article is three to four times the cost of the raw material.

Comparing the profits in the two countries we find that they are higher in the Punjab than in Scotland, because in Scotland the competition of the philanthropic bodies financed by charity and sentiment...
keeps them down at a low level thus in the long run damaging the very cause for the improvement of which they were originally intended.

(2). In the case of articles using expensive materials and costly plant, the merchant contracts to buy the finished product, supplies the material, design, colouring, machinery and housing accommodation for the machinery. But ever and above this he has no power over the persons employed regarding conditions of work, hours, holidays etc. This is a stage between the home and the factory and brings up problems in organisation of both types.

SCOTLAND:

In Scotland at the present time there is no branch of the woollen industry of any consequence, working on these lines; although scores of instances can be quoted from the history of the last century, of the general prevalence of this method in Scotland. At Kilbarchan in Renfrewshire, according to the Statistical Account of Scotland 1842, there were 830 looms at work on this system, manufacturing tartans, shawls etc. Today the village has a deserted appearance, with only two looms working for Glasgow firms, because the young people prefer to go into the large towns, while the older people dying out are taking their skill with them.

PANJAB:

A great part of the Panjab industry is working on these lines, especially in the manufacture of carpets. Production is organised, and yet the producers are independent. Firms have built factories consisting of many compartments, each fitted with a loom, and called a shop, which is hired out to the weavers. The firms give out the yarn with instructions as to the design, supplying the raw material,
the tools and machinery. The individual manufacturers contract to supply a certain quantity of a standard quality within a definite time, at a fixed rate. In the matter of hours of work, holidays, employment, and dismissal of workers, as well as wages, the contractors are the only authority, the firms having absolutely no say in the matter. The firms act as organisers of the industry, and intermediaries between the workers in their workshops and the final purchasers, studying the changing tastes and variations in demand, and undertaking the risks involved. Multan and Amritsar are the two centres of manufacture, while the United States of America is the chief customer.

The existence of the industry is due to economic historic and accidental causes. It is not easy to trace the introduction of the industry into the country to any definite time; for the hot climate of India does not demand the use of warm carpets and rugs. The Moghal invaders coming from cold countries appreciated the value of the article. According to the Ain-i-Akbari the Emperors gave much encouragement to the manufacture of silk, woollen carpets and brocades. The grandeur of the courts and the personal interest taken by the kings attracted workmen from all parts of the Empire. With the decline of the Moghal Empire, the industry due chiefly to royal patronage gradually declined. The London Exhibition of 1851 gave fresh impetus to production by creating a new market in the west. The great demand attracted many into the manufacture of carpets — the jalis took it up as a paying concern; private enterprise started factories at Amritsar and Multan; the 'julahas' (hand weavers) finding machine competition impossible
to stand rising in swelling the ranks of the decreased demand for Kashmiri shawls in Europe from 1870, made all the Kashmiri labour settled in the Province turn to the manufacture of carpets, especially at Amritsar; lastly, the mechanical nature of the work made it profitable to employ large hosts of boys at low wages. The World's Fair at Chicago in 1893 gave further encouragement to the Amritsar trade, which increased to such an extent that by 1897 the Government of India found it necessary to give a separate heading, in its trade figures, to carpets and rugs in the Punjab. This led to keen commercial rivalry and a boom about the beginning of the present century. The great distance between the producer and the consumer, the hosts of middlemen between them, the inadequate information regarding the industry, resulted in overproduction and low prices. The producers could not control the supply, so they had recourse to methods lowering the standard of business morality. The Indian processes of dyeing were expensive, requiring time and skilled knowledge, which the hard pressed producer could not afford, so he resorted to the use of cheap dyes. The resulting crude and inharmonious colours further reduced the demand, and the ultimate consequence was the use of bad materials.

Since 1914 the industry has regained a firmer footing, and the articles produced are good, strong and durable. The era of great production due to royal patronage is over, and the industry depends on its own merits and public favour. The designs and colourings formerly were slavish copies of Persian and Kashmiri originals, which in time became stale owing to their sameness and lack of individuality. These degenerated
into nondescript composition to suit the fashions of Europe and America. Now western firms send out their own designs to be worked on the Punjab looms, as America, and Britain are the two chief markets. These reproductions are by no means contemptible pieces of work. It has been remarked that the Punjab carpet, though not an original masterpiece, is often a very respectable copy, and if it is not a work of art, it is at least an honest and durable piece of merchandise.

4. A BRIEF SECTION ON THE FACTORY INDUSTRY.

The chief characteristic of the large scale manufacture of wool is the use of highly specialised machinery. The small producer does not doubt use some sort of machinery, but his machinery is crude and simple. Most of the operations done by hand at the cottage stage are in the modern world relegated to the domain of machinery; so that all these methods are dying out, and in another quarter of a century may be only of historical interest. "With the advent of costly machinery and production on a large scale we have the condition of things to which we are accustomed in our modern factories, and we, where the owners or controllers of capital not only find the market but organise and regulate the actual process of manufacture.

The very fact that the organisation of factories is so common and so familiar that it can be personally seen in any town or looked up in any text book, has led me to devote less space to the methods of wool manufacture in factories. Though I have dealt with the cottage industry in great detail in order to lay stress on the common basis of its origin in the two countries, and also to explain

methods and processes which are generally unfamiliar to the average townman.

Industry in Scotland is practically all on a large scale, carried on in factories with modern specialised machinery; even the small cottage industry of the north is fast disappearing. Manufacture in the Panjab is largely done by hand on a small scale, yet there are three important factories at Dharawal, Chhanakta and Amritsar, engaged entirely in the manufacture of woollens. The Panjab is mainly an agricultural Province, but agriculture and industry are not necessarily competitive forces -- India too was considered incapable of industrialisation, but today Bombay and Calcutta can well hold their own against any modern industrial town, and already she ranks in the League of Nations as the fourth great industrial country of the world. In the past the great drawback of the Province has been a lack of coal for generating power for manufactures and transport. During the last quarter of a century the Panjab has gradually been industrialised, and the supply of cheap power by the hydro-electric scheme will in the near future result in the creation of a large number of factories, and a much greater utilisation of a number of products that are now exported to be manufactured in foreign countries.

The PRINCIPAL OPERATIONS in factory manufacture are much the same as in the cottage industry in wool, only much quicker and more regular being performed by machinery worked by electric or steam power. A brief reference to the processes is sufficient for our purpose:

A. Preliminary processes -- after being sorted the wool is washed in certain solutions and then dried.
b). Combing -- long wools are prepared for the comb by the Preparer, while short wools are prepared for the comb by the Carder. Combing has a two-fold function: firstly, to separate the short and non-uniform fibres (like kemp, partly grown fibres, and broken and weak fibres which cannot stand strain), and all vegetable impurities, from the fibres of a longer and more uniform length; secondly to effect the parallelisation or straightening of the remaining fibres. Combing is resorted to for worsteds, while woollens need only carding.

c). Spinning -- the principle is the same as in hand spinning, but in a machine hundreds of spindles can be worked at one time tended by a few hands.

d). Processes preparatory to weaving -- are winding, warping and sizing, which employ a great deal of hand labour.

e). Weaving -- forms a fabric by interlacing warp and weft threads. The power loom is a complex, quicker, heavier, and more perfected form of the hand loom. The three main processes are shedding (dividing the warp into two portions for the insertion of the weft), picking (throwing the shuttle through the opening formed in the warp by the shedding motion), and beating up (pressing the weft pick just thrown close up against that immediately preceding it, and thus forming a close texture). The initial outlay required for the installation of machinery is very heavy, but in the long run proves much more economical, as the work is done much quicker and cheaper than the handloom, and it is possible to produce a much greater variety of colour, design and quality.

f). Finishing -- a fabric is made or marred in the finishing; it is a skilled process which must make the
cloth pleasant to the senses. It consists of various operations - washing, shrinking, drying, cutting knots and extra ends, darning in broken threads, making the surface smooth, and ironing and folding.

g). Dyeing -- preparing, carbonising, bleaching, and dyeing have in recent years received a great deal of expert attention. Attempt is being made to classify the great variety of dyes and have a colour index. Sometimes the dyeing is done in wool, often in yarn (especially when the dye is expensive, and the stuff has to have designs of different colours), at times the finished article is dyed in cloth.

The factory industry system is the most efficient system of mass production known up to this time. The application of mechanical power is its essential feature, necessitating the use of heavy and expensive machinery. The economic use of this demands the coordination of labour at a certain time and place, and minute division of labour with specialisation of functions. The employer supplies the machinery, housing for machinery, and raw material, paying the workers fixed wages, and controlling the sale of the finished article.

Machine manufactured woollens consist of tweeds, worsted and woollen cloths, blankets, carpets, rugs, and hosiery. In Scotland practically the whole industry is carried on in factories on a large scale; while in the Punjab, at the present time there are only a few large factories. So far coal has been used for generating power, and has brought up many problems for consideration.

Mining is an extractive industry in which the amount taken out is never replaced; then there are places where every other material is available for a successful industry.
except coal, the carriage for which comes too heavy etc. The recent coal strike of Britain has unmistakably warned the country that its coal resources are fast getting exhausted, and it must look out for some other means of generating power. In the Panjab all the coal had to be imported from Bengal, a distance of over a thousand miles by land, so that her industries have greatly been retarded.

The future seems to lie with hydro electric power, and industries will probably be localised near mountains so that the available water power might be utilised. At the present time the problem is not as acute in Britain as in the Panjab. By the proposed hydro electric scheme it is estimated (Indian Munitions Board Industrial Handbook 1919, p 151) that the cost of energy will be reduced in the ratio of from 12 : 1 in the Panjab. This will encourage industrialisation which will in turn create a greater demand for power, making it still cheaper. The other problems regarding the condition of the industry etc have been fully dealt with in the chapters on the material and its marketing.
CHAPTER FOUR. Scotland

THE HUMAN FACTOR.

1. Labour and its Distribution . . 123

2. The State and the Employer . . 140

3. The Cottage Industry . . 146
1. LABOUR, and its Distribution

In Scotland there is a specialised industrial class entirely dependent on wages, with no other subsidiary occupation. Factory labourers generally have little connection with land, as their ancestors were naturally glad to get away from it with its feudalism and servitude.

Subjectively considered the average worker is efficient has general education (99% being returned as literate), and facilities for specialised industrial training. The hours of work are short (legally 10 for women, but actually 8 hours daily for all), but the work is intense and the output as much and in some cases even more than when long hours were worked. He lives in a healthy environment — physically, workers are medically examined, and treatment is provided — mentally, elementary education is compulsory up to 14 years, after which it is carried on in evening classes and continuation schools (which so far are not compulsory) — morally, there is a certain unwritten code universally obligatory and the welfare Dept. to raise the sanitary and moral tone of the workers.

From the objective point of view, the Scotch man belongs to a hard working race, and has a good constitution. The standard of living is high, while the climate is cold and bracing, conducive to hard work.
LABOUR FORCE:

For practical purposes the labour supply roughly speaking, is the population of the country over the age of 12 years. The demand for labour is the aggregate demand of all the industries. Keeping this in view, many valuable deductions can be drawn from the census figures. Before proceeding further I should like to make it clear that the statistics in this chapter are all taken from the Census Reports for Scotland for the year 1921. Second, that industry (service performed collectively by all in one employment) has been taken for the basis of the statistics in this chapter, and not occupation (class of work performed by an individual): as certain unspecified means of livelihood, stated in general terms have been entered among the industries, but not being sufficiently definite have been left out from the tables of occupations.

The total population of Scotland is estimated at 4,882,497:-

<table>
<thead>
<tr>
<th>Years</th>
<th>Men</th>
<th>Women</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 11 years</td>
<td>576,414</td>
<td>567,722</td>
<td>1,144,136</td>
</tr>
<tr>
<td>12 and over</td>
<td>1,771,328</td>
<td>1,967,133</td>
<td>3,738,461</td>
</tr>
<tr>
<td>Total</td>
<td>2,347,742</td>
<td>2,534,855</td>
<td>4,882,497</td>
</tr>
</tbody>
</table>

The labour supply (12 years and over) is thus estimated at 3,738,461 persons. Out of this potential labour supply only 2,149,562 persons (men 1,521,337; women 628,225) are actually engaged in industry.

POSITION OF THE WOOLLEN INDUSTRY:

AMONG THE VARIOUS INDUSTRIES:

A glance at the table (page 125) of the distribution of population among the various industries is sufficient to show that Scotland is mainly a


### DISTRIBUTION OF POPULATION AMONG THE INDUSTRIES IN 1921

<table>
<thead>
<tr>
<th>INDUSTRIES</th>
<th>MEN</th>
<th>WOMEN</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Production of Raw materials</td>
<td>536,976</td>
<td>23,071</td>
<td>559,041</td>
</tr>
<tr>
<td>B. Preparation &amp; supply of mater.</td>
<td>31,797</td>
<td>23,781</td>
<td>55,578</td>
</tr>
<tr>
<td>C. Public administration, liberal arts</td>
<td>47,058</td>
<td>36,628</td>
<td>83,686</td>
</tr>
<tr>
<td>D. Miscellaneous</td>
<td>24,673</td>
<td>13,638</td>
<td>38,311</td>
</tr>
<tr>
<td>E. Domestic (personal) services</td>
<td>47,222</td>
<td>24,459</td>
<td>71,681</td>
</tr>
<tr>
<td>Total engaged in industry</td>
<td>1,481,537</td>
<td>626,045</td>
<td>2,107,582</td>
</tr>
</tbody>
</table>

**Percentage Graph Showing the Distribution of Population Among the Industries in the Year 1921.**
manufacturing country, employing 40.61% (899,280) of
the working population, in manufactures; as against
7.13% (179,932 persons) engaged in agriculture.

AMONG THE VARIOUS MANUFACTURES:

In the distribution of labour among the various
manufactures, textiles account for 24% of the labour
employed (218,054 persons engaged in textiles out of
899,280 persons in manufactures).

AMONG THE VARIOUS TEXTILES:

Textiles in Scotland employ 218,054 hands --
(i.e., manufacture of textiles . . . . 151,166 persons
and manufacture of clothing . . . . 66,888 persons).

Leaving out the manufacture of clothing, which does not
give a definite and separate account of the woollen
industry, and treating only of the labour engaged in
the actual manufacture of textiles, the term textile in
this chapter is taken to refer only to the manufacture
of textiles which employ 151,166 persons.

A study of the table on page 727, dealing with
the population engaged in the manufacture of textiles
brings out the following conclusions:

1. Wool is the most important textile of Scotland,
employing 29% of the total engaged in textiles; while
jute holds the second position and employs 22%.

This table has been compiled from facts taken from
Tables 13 and 14 of the Census Reports of Scotland
1931. From the miscellaneous group (table 13), knitting
hosiery, carpets and rugs have been included under the
group for wool; while rope, cord, and twine manufacture
have been put into flax and hemp (group 4), as the data
were not sufficiently distinct to allow of their separation.
### Distribution of Population Among the Various Textiles

### Manufacture of Textiles

<table>
<thead>
<tr>
<th>Textiles</th>
<th>Men</th>
<th>Women</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wool</td>
<td>13,722</td>
<td>30,497</td>
<td>44,219</td>
</tr>
<tr>
<td>Jute</td>
<td>11,218</td>
<td>22,332</td>
<td>33,550</td>
</tr>
<tr>
<td>Flax and Hemp</td>
<td>7,865</td>
<td>17,679</td>
<td>25,544</td>
</tr>
<tr>
<td>Cotton</td>
<td>6,597</td>
<td>18,412</td>
<td>25,009</td>
</tr>
<tr>
<td>Dyeing and Printing</td>
<td>8,616</td>
<td>6,677</td>
<td>15,293</td>
</tr>
<tr>
<td>Lace etc.</td>
<td>2,864</td>
<td>4,687</td>
<td>7,551</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>50,882</td>
<td>100,284</td>
<td>151,166</td>
</tr>
</tbody>
</table>

### Percent of Population Engaged in the Manufacture of Textiles

- **Wool**: 14.17%
- **Jute**: 4.78%
- **Flax and Hemp**: 11.7%
- **Cotton**: 4.36%
- **Dyeing and Printing**: 5.7%
- **Lace etc.**: 1.9%
- **Total**: 66.33%

### Table:

<table>
<thead>
<tr>
<th>Men</th>
<th>Women</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>908</td>
<td>14.17</td>
<td>0.74</td>
</tr>
<tr>
<td>20.17</td>
<td>11.7</td>
<td>6.56</td>
</tr>
<tr>
<td>14.70</td>
<td>5.2</td>
<td>3.28</td>
</tr>
<tr>
<td>12.15</td>
<td>4.36</td>
<td>2.88</td>
</tr>
<tr>
<td>5.70</td>
<td>4.75</td>
<td>3.42</td>
</tr>
<tr>
<td>5.9</td>
<td>3.7</td>
<td>4.08</td>
</tr>
</tbody>
</table>

**Note:** The table above provides a distribution of the population engaged in the manufacture of various textiles, with percentages for men and women provided for each category.
b) Textiles in general employ nearly twice as many women as men -- women 65.3% and men 35.7%. The same tendency is apparent in the woollen industry, which engages 69% women as against 31% men (slightly more than double).

c) Dyeing, printing, bleaching, finishing etc are exceptions to the above tendency, the proportion of men being greater than that of women. (Men: Women = 56:44). This is due to the fact that the process of working and the manipulation of heavy machinery involves strenuous labour.

d) As an employer of women's labour, cotton ranks first employing nearly three times as many women as men (i.e. 74 women to 26 men). Wool holds the second position engaging twice the proportion of women to men; though in point of numbers it is foremost as an employer of women -- accounting for 26% of the total number of women engaged in the manufacture of textiles.

The reason for this tendency is that certain processes -- spinning and piecing, winding and reeling, beamng and weaving, and most especially finishing -- require little physical strain, but a great many hands for working the machines. They also need neat handling and careful conscientious work -- I do not mean to imply that men are not conscientious, but as a rule men with their wider interests do not pay as much attention to detail as women. Besides, women's labour being cheaper is more economical to employ than men's.

THE DISTRIBUTION OF LABOUR IN THE WOOLLEN INDUSTRY

Industrial centres in Scotland as in England depend for their labour supply on the population resident in the town and its vicinity. Thus the recruitment of labour is mainly from this specialised industrial class which for generations has been engaged in that kind of
### DISTRIBUTION OF POPULATION IN THE WOOLLEN INDUSTRY

<table>
<thead>
<tr>
<th></th>
<th>MEN</th>
<th>WOMEN</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>% of T</td>
<td>Number</td>
</tr>
<tr>
<td>Wool, worsted &amp; shoddy</td>
<td>18,22</td>
<td>20.76</td>
<td>11,175</td>
</tr>
<tr>
<td>Hosiery &amp; Knitted goods</td>
<td>2,134</td>
<td>4.83</td>
<td>4,422</td>
</tr>
<tr>
<td>Carpets &amp; Rugs</td>
<td>2,146</td>
<td>4.97</td>
<td>30,469</td>
</tr>
<tr>
<td>Total</td>
<td>13,624</td>
<td>31.03</td>
<td>61,179</td>
</tr>
</tbody>
</table>

Diagram showing percentage distribution of men and women in the various departments of the Woollen Industry.

Scale: \[ \text{Diagram Scale} = 1 \]
work. A study of the birthplaces of the population engaged in textiles gives a fair idea of the sources of the supply of labour (Census Report 1921, Tables 6, 9, 10). As separate figures are not given for the woollen industry, and wool forms the main textile industry of Scotland, we can safely say that the general tendencies of the textile industry are equally applicable to the woollen industry. Out of a total of 128,973 workers engaged in the manufacture of textiles (p. 185 Census of Scotland 1921) 122,877 are returned as of Scotch birth, 2850 English, and 302 Irish.

The statistics for occupations, met industries.

There are three main branches of woollen manufacture, which employ a total of 44,219 hands (page 127).

In wool worsted and shoddy the proportion of men to women is as 21 to 30 (9182 men : 13,175 women). This is the only branch of the industry where men are employed to such a great extent, and this is due to the use of heavy machinery in manufacture.

Hosiery and knitted goods employ women largely -- in the proportion of 29 women to 5 men. Although the total number of hands engaged in this department is much smaller than that in wool worsted and shoddy, the number of women employed is practically the same in both.

Carpets and rugs employ only 15% of the total engaged in the woollen industry, of which seven tenths is at Glasgow in Lanark (page 131). The proportion of women to men is as 2 to 1.

**Geographical Distribution of the Woollen Industry.**

The geographical distribution is based on the Table 13 of the Census Report of Scotland for 1921, vol. II.

Calculating the distribution of population in the woollen industry per 1000 of the working population in each county.
<table>
<thead>
<tr>
<th>Place</th>
<th>Total employed</th>
<th>Per 1000 employed in Woollen Industry</th>
<th>Total employed</th>
<th>Per 1000 employed in Woollen Industry</th>
<th>Total employed</th>
<th>Per 1000 employed in Woollen Industry</th>
<th>Total employed</th>
<th>Per 1000 employed in Woollen Industry</th>
<th>Total employed</th>
<th>Per 1000 employed in Woollen Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sutherland</td>
<td>1566</td>
<td>45.6</td>
<td>1187</td>
<td>26.8</td>
<td>20</td>
<td>.09</td>
<td>2,757</td>
<td></td>
<td>133,465</td>
<td>20.6</td>
</tr>
<tr>
<td>Chirk</td>
<td>2390</td>
<td>49.5</td>
<td>2524</td>
<td>49.9</td>
<td>1,180</td>
<td>15.3</td>
<td>5,564</td>
<td></td>
<td>130,437</td>
<td>42.6</td>
</tr>
<tr>
<td>Grangemouth</td>
<td>289</td>
<td>6.5</td>
<td>12</td>
<td>.2</td>
<td>1</td>
<td>.02</td>
<td>389</td>
<td></td>
<td>22,591</td>
<td>13.3</td>
</tr>
<tr>
<td>мо:</td>
<td>275</td>
<td>8.7</td>
<td>7</td>
<td>.1</td>
<td>13</td>
<td>.02</td>
<td>377</td>
<td></td>
<td>13,096</td>
<td>20.3</td>
</tr>
<tr>
<td>Rutherglen</td>
<td>27</td>
<td>.5</td>
<td>22</td>
<td>.4</td>
<td>11</td>
<td>.1</td>
<td>45</td>
<td></td>
<td>13,759</td>
<td>4.5</td>
</tr>
<tr>
<td>Stirlingshire</td>
<td>13</td>
<td>.2</td>
<td>4</td>
<td>.09</td>
<td>1</td>
<td>.1</td>
<td>17</td>
<td></td>
<td>11,860</td>
<td>1.4</td>
</tr>
<tr>
<td>Ayrshire</td>
<td>3288</td>
<td>70.7</td>
<td>70</td>
<td>1.5</td>
<td>11</td>
<td>.1</td>
<td>3,209</td>
<td></td>
<td>14,866</td>
<td>215.8</td>
</tr>
<tr>
<td>Renfrew</td>
<td>48</td>
<td>1.0</td>
<td>116</td>
<td>2.6</td>
<td>6</td>
<td>.1</td>
<td>187</td>
<td></td>
<td>65,527</td>
<td>2.8</td>
</tr>
<tr>
<td>Dunfermline</td>
<td>1376</td>
<td>31.1</td>
<td>873</td>
<td>19.7</td>
<td>6</td>
<td>.1</td>
<td>485</td>
<td></td>
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<tr>
<td>Inverness</td>
<td>166</td>
<td>1.7</td>
<td>130</td>
<td>2.7</td>
<td>52</td>
<td>1.1</td>
<td>286</td>
<td></td>
<td>31,373</td>
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<tr>
<td>Renfrew</td>
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<td>53</td>
<td>1.1</td>
<td>342</td>
<td>7.7</td>
<td>440</td>
<td></td>
<td>157,701</td>
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<td>Argyll</td>
<td>63</td>
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<td>10</td>
<td>.2</td>
<td>1</td>
<td>.02</td>
<td>682</td>
<td></td>
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<tr>
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<td>671</td>
<td>15.1</td>
<td>10</td>
<td>.2</td>
<td>1</td>
<td>.02</td>
<td>78</td>
<td></td>
<td>17,527</td>
<td>4.4</td>
</tr>
<tr>
<td>Inverness</td>
<td>35</td>
<td>.7</td>
<td>43</td>
<td>.9</td>
<td>1</td>
<td>.02</td>
<td>78</td>
<td></td>
<td>17,527</td>
<td>4.4</td>
</tr>
<tr>
<td>Falkirk</td>
<td>106</td>
<td>2.3</td>
<td>3</td>
<td>.06</td>
<td>1</td>
<td>.02</td>
<td>110</td>
<td></td>
<td>3,655</td>
<td>3.03</td>
</tr>
<tr>
<td>Cunninghame</td>
<td>410</td>
<td>9.2</td>
<td>399</td>
<td>9.1</td>
<td>27</td>
<td>.6</td>
<td>836</td>
<td></td>
<td>15,841</td>
<td>50.5</td>
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<tr>
<td>Ayrshire</td>
<td>626</td>
<td>18.9</td>
<td>2757</td>
<td>62.3</td>
<td>3,164</td>
<td>71.5</td>
<td>6,787</td>
<td></td>
<td>62,194</td>
<td>9.6</td>
</tr>
<tr>
<td>Kirkintyre</td>
<td>361</td>
<td>6.1</td>
<td>1016</td>
<td>22.9</td>
<td>790</td>
<td>11.6</td>
<td>2,167</td>
<td></td>
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</tr>
<tr>
<td>Mayhill</td>
<td>631</td>
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<td>.1</td>
<td>1</td>
<td>.02</td>
<td>286</td>
<td></td>
<td>17,866</td>
<td>17.7</td>
</tr>
<tr>
<td>Renfrew</td>
<td>3</td>
<td>.06</td>
<td>37</td>
<td>.6</td>
<td>1</td>
<td>.02</td>
<td>50</td>
<td></td>
<td>3,773</td>
<td>.7</td>
</tr>
<tr>
<td>Renfrew</td>
<td>12</td>
<td>.2</td>
<td>37</td>
<td>.6</td>
<td>1</td>
<td>.02</td>
<td>50</td>
<td></td>
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<td>4.7</td>
</tr>
<tr>
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<td>4</td>
<td>.09</td>
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<td>.02</td>
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<td>6.2</td>
<td>25</td>
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<td>123</td>
<td>2.7</td>
<td>506</td>
<td></td>
<td>59,426</td>
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</tr>
<tr>
<td>Renfrew</td>
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<td>12.2</td>
<td>1180</td>
<td>26.6</td>
<td>590</td>
<td>13.3</td>
<td>2311</td>
<td></td>
<td>139,379</td>
<td>16.5</td>
</tr>
<tr>
<td>Renfrew</td>
<td>112</td>
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<td>8</td>
<td>.1</td>
<td>2</td>
<td>.04</td>
<td>120</td>
<td></td>
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<td>St Andrews</td>
<td>2397</td>
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<td>3098</td>
<td>70.08</td>
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<td>.04</td>
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<td></td>
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<td>29.8</td>
</tr>
<tr>
<td>Renfrew</td>
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<td>110.4</td>
<td>53</td>
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<td>1</td>
<td>.1</td>
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<td></td>
<td>4,937</td>
<td>59.8</td>
</tr>
<tr>
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<td>.2</td>
<td>1321</td>
<td>29.4</td>
<td>326</td>
<td>7.3</td>
<td>964</td>
<td></td>
<td>12,500</td>
<td>14.8</td>
</tr>
<tr>
<td>Renfrew</td>
<td>397</td>
<td>8.9</td>
<td>241</td>
<td>5.6</td>
<td>1</td>
<td>.1</td>
<td>60</td>
<td></td>
<td>7,403</td>
<td>8.1</td>
</tr>
<tr>
<td>Renfrew</td>
<td>58</td>
<td>1.3</td>
<td>2</td>
<td>.04</td>
<td>1</td>
<td>.1</td>
<td>503</td>
<td></td>
<td>30,389</td>
<td>14.5</td>
</tr>
<tr>
<td>Renfrew</td>
<td>87</td>
<td>1.2</td>
<td>446</td>
<td>10.08</td>
<td>25</td>
<td>.5</td>
<td>91</td>
<td></td>
<td>13,287</td>
<td>68.4</td>
</tr>
</tbody>
</table>

| TOTAL          | 22,870         | 54                                    | 15,425         | 35                                  | 6,643          | 30                                  | 44,219         |                                      | 2,209,080       | 1000                                 |
DISTRIBUTION OF LABOUR IN THE
DIFFERENT BRANCHES OF THE
WOOLEN INDUSTRY, CALCULATED
PER 1000 OF THE TOTAL ENGAGED
IN THE WOOLEN INDUSTRY:
WOOL, WORSTED AND SHOODY
HOISERY AND KNITTED GOODS
CARPETS AND RUGS

OVER 40 COLOURED,
[8/1, above page 131]
Selkirk, Peebles, Roxburgh, and Clackmannan employ the greatest proportion of wool workers -- over 200 hands per 1000 actually working in each county. Wigtown and Kirkcudbright are second, while Ayr Kinross and Berwick come third (page 131).

Considering next the distribution of labour in the different branches of the woollen industry, in its proportion to the total engaged in the manufacture of woollens (pages 131 and 133) -- 44,219 persons, if the proportion is taken per 1000, the following conclusions are evident.

In wool, worsted and shoddy, Selkirk employs the largest number -- 110 per 1000; Clackmannan -- 71; Ayr -- 50; Peebles -- 48; and Aberdeen -- 46.

Hosiery and knitted goods are manufactured on a large scale at Lanark -- 71 per 1000; and Roxburgh -- 70; Ayr following up with -- 50.

Lanark employing 71 per 1000, is the main county for the manufacture of carpets and rugs.

The cottage industry -- Shetland employs 30 hands in hosiery and knitting per 1000 of those engaged in the woollen industry of Scotland (1301 out of 44,219). The manufacturers are small independent workers. The total working on their own account in Scotland is 2,014 (page 137), thus the 1301 persons engaged in the Shetland hosiery and knitting industry form 66% of the total cottage workers.

AGE DISTRIBUTION OF WOOLLEN MANUFACTURERS.

The census figures for different ages are not given at regular intervals. For earlier ages they begin at intervals of 2 years, rising to 5 for ages from 20 to 45.
THE DISTRIBUTION OF POPULATION
AT DIFFERENT AGES IN THE WOOLEN INDUSTRIES.
years, and then towards the latter part they are piled up at intervals of 10 years. On page 135, the frequency curve has been plotted direct from the statistics in order to show the actual tendency.

As the woollen industry employs more than twice as many women as men, the age curve is influenced mainly by the tendencies prevailing among women workers.

WOMEN: 60 per cent of the total women engaged in the woollen industry are working between the ages of 14 and 30 years -- 15,522 out of 30,497 engaged in the woollen industry. The curve shows a sharp rise up to the age of 20, which is the maximum -- 7092 women returned as employed at that age. Then there is a sudden drop between 20 and 30 years, for at this age the majority of women leave their jobs to get married. Between 30 and 35 there is again a rather sharp rise; this is accounted for by the return of a number of married women to the factories after the novelty of married life has partly worn off, and the obligation of a number of widows to earn a livelihood. After that there is a steady decline.

Women's labour in textiles shows exactly the same tendencies and textiles employ 23.5% of the total women engaged in industry (141,456 women in textiles out of 622,445 in industry)

MEN: The age curve for men does not show as many steep ups and downs. The greatest number of men are employed in their prime of life -- 35 to 55 years. The same tendency is noticeable in industry in general, where a number of boys go into work between 14 and 20, but the age of the maximum employed is between the ages of 35 and 50.
STATUS DISTRIBUTION IN THE WOOLEN INDUSTRY.

The main factors to be considered in a study of the human element are the state, the employer and the labourer. Thus the distribution of labour among the various classes in the woollen industry is as follows:

<table>
<thead>
<tr>
<th>Classes</th>
<th>Men</th>
<th>Women</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employers</td>
<td>556</td>
<td>19</td>
<td>575</td>
</tr>
<tr>
<td>Working on own acct</td>
<td>152</td>
<td>1,862</td>
<td>2,014</td>
</tr>
<tr>
<td>Working for employers</td>
<td>13,008</td>
<td>28,609</td>
<td>41,617</td>
</tr>
<tr>
<td>Others</td>
<td>5</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>13,722</td>
<td>30,497</td>
<td>44,219</td>
</tr>
</tbody>
</table>

Each type of labour is essential and important in its own sphere, and may be likened to a man whose limbs represent the manual labourer, whose nervous system stands for the mental co-ordinative labour of direction and supervision, and whose brain is the symbol of invention. Extreme socialists have often forgotten this fact, and taking manual labour as the only productive form of labour, have condemned all capitalists, managers, and commercial middlemen as useless eaters into the national wealth.

In the first place, which workman is entitled to the wealth? With the evolution of modern industry and the ever-increasing division of labour, the production of the commonest everyday familiar article in a civilised

---

1. Census of Scotland 1931; vol IV; Table 13.
and thriving country, involves the labour of so many hands that it exceeds all computation. "The woollen coat for example, which covers the day labourer, as coarse and rough as it may appear, is the product of the joint labour of a multitude of workmen. The shepherd, the sorter of the wool, the combor carder, the dyer, the scribbler, the spinner, the weaver, the fuller, the dresser with many others must all join their different arts in order to complete even this homely production."

Is the sorter to help himself to the wool, or the weaver to claim the finished cloth?

Secondly according to the similar, coordinate action demands the guidance of the limbs by the nervous system. The wool must be bought in the cheapest market, merchants and carriers must be employed to transport the materials from place to place. Each man must be assigned his share of the work, and the finished article sold by the middleman in the nearest market. The merchant and the middleman are doing productive work by creating time and place utilities; while the employer, supervisor and manager is performing a valuable service of his own, which justifies him to claim profits as his reward. It has also been remarked that there is an unnecessary and superfluous supply of this type of labour. Considering just the figures of employment in the woollen industry for 1921, we find that only 1.3% of the total engaged in the industry are employers of labour (page 137), the rest are all either working for these employers, or working on their own account — where then is there a waste in this kind of labour.

In the cottage industry the function of the labourer, the employer, and the capitalist are performed by one and the same man. Up to the end of the eighteenth century, the state and the trade gilds regulated the export and import, the standard of honesty and the relations of workers in the industry; but during the nineteenth century there was no control of the cottage industries and no regulations for work. The present Factory Acts are gradually spreading to wider fields and the desire to regulate conditions of work in the cottages is obvious though not fully brought into practice. There are certain rules for out workers and home workers, but for want of proper enforcement they are so far inoperative; it is hoped that with the resumption of normal conditions of trade and industry this side of life will receive its due share. In this chapter a good deal of space has been devoted to this type of one man organisation; it forms a very small proportion of the Scotch woollen industry — employing about 4.5% of the total engaged in the woollen industry (out of 44,319 persons 2,014 are returned as working on their own account - page 137).

Practically the whole Scotch industry in wool is carried on in factories — 96.5% of the total engaged in the woollen industry (page 137) — where the labourer, the employer, and the capitalist have a separate individuality and a distinct function. The division of labour, separation of functions, the great distance between the original producer and the ultimate consumer, and the spreading of the time involved in production over a longer period, are the main characteristics of the modern factory system.
The state demands a minimum standard of fair treatment for all workers, through legislative enactments, enforced by proper inspection. The labourers demand the maximum concessions possible to obtain, through labour organisations and Trade Unions. The employer acts as a balance, supplying the point of intersection and the equilibrium between the two. He knows he cannot but give what is legally obligatory, for reasons either of humanity or fear of penalty. But the extent of concessions which the employer gives of his own free will, at the present time, over and above this legal minimum may be termed welfare work (voluntary concessions for the well-being of the employees). It depends largely on the education and humanity of the employer, and the insistence of demands from labour organisations.

The state

In Britain, legislation has grown piecemeal, and regulation and inspection are enforceable only for classes specifically mentioned as included in the Factory Acts. Practically the same laws are applicable to woollen mills as to industry in general; hence they have not been treated of in this section. Different standards are set for the selection of workers—educational, physical, moral and psychological.

British industry has grown up independent of state help, except in the matter of protection by legislation.

(1) Concessions regarding sanitation, safety and well-being. The hours of work are not legally controlled for men, but indirectly regulated by the restrictions on the work of women and young persons.

(2) The regulations for cotton mills being slightly more stringent.
Present legislation is wide in scope, and in this respect it may be said that the tendency in modern industrial communities increasingly towards state socialism—work, health, education and even leisure being subjects for regulation.

The woollen industry consists of a number of small businesses, as there are 575 employers to a total of 44,219 persons engaged in the woollen industry—i.e. 13 per 1000. Textiles, in general, account for only 9 per 1000, while the jute industry (the second largest employer of labour among the textiles) consists of very large firms, and returns only 4 employers to every 1000 hands employed in the industry (130 employers to 33,550 persons employed in jute).

Considering the distribution of the employer class among the various branches of the woollen industry, the following facts are noticeable.

<table>
<thead>
<tr>
<th>Department</th>
<th>Men</th>
<th>Women</th>
<th>Total Employers</th>
<th>Total in the Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wool, worsted and shoddy</td>
<td>342</td>
<td>1</td>
<td>343</td>
<td>22,357</td>
</tr>
<tr>
<td>Hosiery &amp; knitted goods</td>
<td>136</td>
<td>18</td>
<td>204</td>
<td>15,306</td>
</tr>
<tr>
<td>Carpets and Rugs</td>
<td>28</td>
<td>28</td>
<td>56</td>
<td>6,556</td>
</tr>
<tr>
<td>Total:</td>
<td>556</td>
<td>19</td>
<td>575</td>
<td>44,219</td>
</tr>
</tbody>
</table>

The wool, worsted and shoddy factories are the smallest of the three, having 15 employers to every 1000 hands engaged in the work; and they are entirely run by men.

Hosiery and knitted goods have 13 employers to 1000 workers, of whom every tenth employer is a woman.

The carpet and rug factories are large, as they return only 4 employers per 1000 hands, and not one of them is a woman.

(1). Census of Scotland 1921; vol. IV; Table 12.
(2). Census of Scotland 1921; vol. IV; Table 12.
The employer, supervisor, and manager perform an important function in the organisation of industry. He scrutinises the natural resources, detects new possibilities, creates new industries, undertakes the risks of production, gathers men in factories, and guarantees wages. He studies the condition of the markets at home and abroad, and he buys the raw material and sells the finished article. In short, he is the general organiser and co-ordinator of all the different specialised departments in modern large establishments. All this work requires a great deal of thought, judgment and foresight, for the business is of such a nature that it involves tremendous risks. Wool is a commodity in which the possibility of complete sampling and grading makes prices liable to considerable fluctuations, thus giving to the market for wool a highly speculative, complex, and worldwide character.

Welfare work is the voluntary contribution of the employer towards the betterment and well-being of his employees, inside or outside the factory. The exact distinction between Welfare Work and State Regulation is not possible to define. Industrial Law (as taken up in the previous section) is merely compulsory welfare work, where an objective minimum standard is laid down, to be achieved by all employers.

When businesses were small, personal intercourse was the basis of the relations between master and man. But with the growth of businesses, and the extreme division of labour specialisation in management has become essential. It was during the War, in 1916, that Welfare of Factory Workers first received official recognition in the passing of State Welfare Orders, for observance in certain factories known as "Controlled Establishments".

The experiment was such a success in the "Controlled Establishments" in increasing the output and the contentment of the workers, that many of the large firms voluntarily adopted the measures, sometimes granting even more than the prescribed privileges. Taking into consideration
just the conditions in the woollen mills, the following facts are of interest. Most of the woollen factories on the Borders (Hawick, Galashiels, and Selkirk) have combined to provide a common welfare worker. Originally he catered only for men, but now the work is carried on among both the men and the women, the work being diffused throughout the mill when relating in general to all workers. At the mills at Aberdeen there is a special Welfare Department in charge of a lady, who has her office in the mill grounds. At Glasgow, the work is undertaken on a large scale, for the carpet mill has fitted up a special building adjoining the factory, with the latest conveniences for workers. There are separate mess rooms for men and women, hot meals are served at lunch and tea, to suit every purse; rest rooms are provided, and also baths with conveniences for foot and shower baths, washing basins, soaps and towels. There is a large hall for dances, dramas, socials, and concerts; clubs are organised, and 'Guiding' is kept up among the girls. The reading room and the library are supplied with books and papers. The department is generally open till 10 p.m., but on special occasions later, with permission. In all this, private initiative and individual enterprise are encouraged.

Practically all the woollen mills of Scotland are situated in healthy open areas, on the banks of streams and rivers. The original idea was to have them near water power, and also close to a supply of soft water for the finishing, The Gala, the Ettrick, and the Tweed, the Allan,

(1). Personally visited in May 1926, and shown round by Mr Sanderson of Galashiels, Mr Gibson of Selkirk, Dr. Oliver of Galashiels (Principal of South of Scotland Technical College), and Mr Turnbull of Hawick.

(2). At Aberdeen, Miss Black, the Welfare Worker, showed me round the Crobbie Woollen Mills in June 1926.

(3). At Glasgow, Miss John, the lady in charge of the Welfare Dept. of the Templeton Carpet Factory, was my guide in Dec. 1926.
the Don and the Dee and many other rivers are crowded with woollen mills, sometimes on both banks e.g.—the Gala. Being in open healthy areas it is not necessary to provide the mills with parks, or sports fields.

A typical mill on the banks of the Allan.

The workers live out in the city, coming into the factory every day. Most mills have therefore provided facilities for their rest during recess intervals, and mess rooms and canteens where they can have their mid-day meal served hot. Some mills give a mug of hot tea and a biscuit to every worker while at his post at about four in the afternoon.

(1)

The mills at Lanark provide cheap and convenient facilities of communication between the mills and the homes of the workers. Housing is not generally provided for by the mill authorities in any of the woollen mills. The same question arises here as in education—who is going to finance it, the state, the employer, or the labourer? In education, the human material is not part of the employers capital, and there is no direct insured return from the investment; while the building of houses is investing in private property, and could be made a paying concern by charging rental sufficient to cover the interest on the capital sunk. In most industrial areas there are so many individual firms, that it would be impossible for any one of them to launch out on a housing scheme of its own. Hence the necessity of the provision of working men's houses by
the state, except in newly industrialised areas, where the employer is anxious to build up a labour supply in the vicinity of the factory. I have come across just one case of this type in the Scotch woollen mills, at Selkirk. The employer himself lived at Galashiels, but owing to inability to procure building space on the banks of the Gala, had had to go to Selkirk. He had built a row of comfortable, compact, independent model cottages, with small plots at the back, all round a green space, at Selkirk. Thus he had induced his labourers to come from Galashiels and settle down near their work.

Knitting has always been considered a peculiarly Scottish art; it is by most historians believed to have been invented in Scotland about 1700. In his book, "The Story of Scotland", E. Yarrows Clark gives an account of the Shetland hosiery industry. "The Shetland hosiery industry, though still carried on pretty extensively throughout the islands, is by no means what it used to be. Three hundred years ago, when the native hosiery industry was at its height, and when the Shetland trade was a rival of the Low countries and Shetland their customers, a variety trade was done every season on the shores of British India (the town of Lerwick at that time being non-existent) between the Islanders and the foreign fisher men, who were ever ready to hasten the progress of their new country for the comfortable woollen garments brought by the East Indias of the Shetland women." Writing in 1773, Lab, in his "Tour Through England and Shetland", says that the islanders that the woollen trade was the first to be established in.

(1) Information from a talk with the Welfare Worker at the woollen mills at Lanark.

(1) The Story of Scotland, E. Yarrows Clark, 1900.
The different aspects of the cottage industry in wool -- production, marketing, methods of manufacture, and the organisation of the industry, have all been treated of in fair detail in the preceding chapters; still, the problems are so bound up that the different aspects have had to be referred to, even at the risk of repetition. The industry at present is both of historical and practical interest. A study of the various branches of woollen work and its localisation, historically treated, is very instruct

Knitting has always been considered a peculiarly Scottish art; it is by most historians believed to have been invented in Scotland about 1500. In his book (1) "The Story of Shetland", W. Fordyce Clark gives an account of the Shetland hosiery industry. "The Shetland hosiery industry, though still carried on pretty extensively throughout the islands, is by no means what it used to be. Three hundred years ago, when the Dutch herring fishery was at its height, and when thousands of busses from the low countries made Shetland their rendezvous, a roaring trade was done every summer on the shores of Bressay Sound (the town of Lerwick at that time being non-existent) between the islanders and the foreign fishermen, who were ever ready to barter the produce of their own country for the comfortable woollen garments knitted by the deft fingers of the Shetland women." Writing in 1772 Lov, in his "Tour Through Orkney and Shetland", says that the whole time the Dutch fleet lay in the harbour the country people flocked to the shore with "loads of coarse stockings, gloves, night-caps, rugs, and some few articles of fresh provisions" ......"The rugs were a sort of carpet stuff, used sometimes

for coverlids for beds and seemed peculiar to Shetland. They were made of different coloured worsteds, sewed on a coarse ground. At the end of the 18th. century "Zetland Hosiery" was sent in great quantities to towns on east coast of Scotland in exchange for groceries. At present, Shetland has 1301 persons working at hosiery and knitting, out of a total of 1311 engaged in the manufacture of wool, and practically all are working on their own account. About 1790 Aberdeen was a great centre for knitted manufactures, from where great quantities were exported to America, Holland and North Germany. About 1840 most of the parishes in Aberdeenshire were engaged in the manufacture of stockings -- at Rayne, knitting of woollen stockings was the only occupation in which all the women and some old men were employed for the Dutch market. At this time the stocking frame was discovered at Hawick which took the lead in the stocking trade, and since has acquired a world wide reputation for hosiery. At the present time Roxburgh accounts for a fifth (3099 out of 15425) of the total engaged in the hosiery industry of Scotland -- which is now a factory industry. The stocking trade in Aberdeen was succeeded by the knitting of coarse worsted vests or underjackets for sea-faring persons, and of blue woollen bonnets commonly worn by labouring men and boys. At present the industry at Aberdeen is mainly in wool worsted and shoddy, though hosiery and knitting, too, employ 27% of the total engaged in Woollen Manufacture in the county. About 1840, other centres for hosiery and knitted goods were Galashiels (Selkirkshire), Moffat (Dumfriesshire), and Fetteresso (Kincardineshire), besides Hawick, Jedburgh and Aberdeen. So far, the industry was mainly a cottage industry.

(1) & (3). General Report of Scotland by J. Sinclair, 1814, Book IV.
(2) & (5). Census of Scotland, 1921, Vol. 4, Table 13.
(4). Statistical Account of Scotland, J. Sinclair, 1845, Aberdeen, Volume 12 -- parishes of Meldrum, Methlick, Turriff, Biru, Keig, Coull and Rayne, etc.
in which the different firms in Aberdeen, Glasgow, Stirling, etc. had their agents, who weekly or monthly went round to the workers distributing the yarn, and then collecting the work for sale. At the present time the hosiery and knitting industry is, to a large extent, a factory industry centralised at Roxburgh, Lanark, Ayr, Aberdeen, Renfrew and Edinburgh, employing 15,425 persons out of a total of 44,219 engaged in the Woollen Industry; (3). Out of these, only 1466 persons are returned as cottage workers (mainly in Shetland and the North).

Knitting and hosiery are industries peculiarly adaptable to hand work, thus having great possibilities of development as cottage industries on a small independent scale. Since the war there has been an increasing use of knitted goods in Britain, and the demand is likely to increase still further. This is attributable to their warmth and lightness, the possibilities of variation in style, colour and design; the economy of being able to manufacture them at home during spare time, at very nearly the cost of the raw material, no waste of cloth in cuttings and the saving in the heavy dressmaker's bills.

WOVEN CLOTH.

Up to the 19th. century the cottage manufacture of coarse fabrics (seys and serges), plaidings, broadcloth, flannels and woollens, was one of the main industries of the West of Scotland -- an area completely given over to domestic weaving. "The husbandmen in Scotland" says a writer of the seventeenth century "the servants and almost all the

Overleaf.


country did wear coarse cloth made at home of grey or sky
colour". Every farm had its loom, every hamlet had its
weaver, and every cottage had its means of spinning and
weaving; even to the beginning of the last century.

With the use of power driven machinery and the
manufacture of woollen goods on a larger scale, the
manufacture became localised about 1800 at Aberdeen,
Inverness, Argyle, Perth, Ayr, Peebles, Selkirk and Roxburgh.
Tartans were fabricated at Stirling, Argyle and Inverness,
while coarse cloths and blankets continued to be made all
over Scotland.

By the middle of the century, cloth manufacture
gradually became a factory industry, throwing hundreds of
handloom workers out of employment. The tweed industry had
then, as even now, its centre in the Border towns —
(2)
Jedburgh, Galashiels, Hawick, Selkirk, Peebles, Alva etc. —
but gradually it spread to other places like Dumfries,
Bannockburn, Pitlochry, Aberdeen, Inverness, Elgin, Keith
and Aberdeen which now has the largest tweed mill in
Scotland (Crombie at Woodside). Hand made tweeds are manufact-
ured in northern Scotland and the Western Islands, particularly
Harris.

(1). General Report of Scotland by J. Sinclair 1814, Book IV.
(2). Statistical Account of Scotland 1845. Refer each town
in its county.

For statistics refer Census of Scotland 1921, Volume 4,
Table 13.
Carpets and Rug manufacture at the end of the 18th century was principally at Kilmarnock, Darnickburn, Aberdeen and Hawick, and was essentially a cottage manufacture. The industry gradually became localised at Glasgow, Ayr and Aberdeen as well. Now, the principal centres are Glasgow, employing 3164 (43%) and Ayr, employing 1120 (17%) persons, out of a total of 6643 persons engaged in the manufacture of carpets and rugs in Scotland. This industry is a factory industry.

(2) Census of Scotland, 1921, Volume 4, Table 13.
A historical study of the various branches of the woollen industry lands us ultimately into the heart of the factory industry. The manufacture of woollens was for long one of the most important industries of Scotland, and was carried on as a cottage industry right to the beginning of the 19th. century. Being such an important element in the industrial economy of the nation, it formed one of the main subjects for legislation in Scotland. The State used it as one of the main sources of obtaining revenue. (1)

(1). Acts of Parliament of Scotland up to 1707, 12 Volumes. Public general statutes affecting Scotland from 1707 to 1847, 3 Volumes. Refer for historical facts, according to date. (2).—e.g. Wool was one article for which the King was granted a special privilege of free purchase throughout the kingdom, in 1357. In 1363 the King of England, when wanting help from Scotland, used wool as a bribe, promising to lower the custom duty on its export to England. In 1364, it was the means of raising sufficient money for the ransom of David II. The Act of 1661, although entitled "Act for erecting of manufactories", refers to the woollen industry as the only specific case. The woollen industry, throughout legislative history, is granted special privileges and exempted as often as possible from the payment of taxes — 1641 erectors of manufactories permitted to import foreign and Spanish wool for making fine cloth, free of custom for 15 years. In 1707, the Act of Union provided that £2,000 be devoted yearly, for seven years, to the industries most conducive to the welfare of the nation — encouraging and promoting the manufacture of coarse wool, within these shires which produce the wool. (3). Acts of Parliament of Scotland to 1707. Public general statutes affecting Scotland, 1707-1847.
A detailed code of laws was enacted for its protection, the main idea underlying it being the material, moral and social uplift of the people by creating employment for them. The idea was carried to such an absurd extent that in the 17th century an Act was passed in the parliament of Scotland (in imitation of a similar Act in England), making it compulsory to bury in wool.

Numerous measures were adopted to protect the industry against foreign competition. The internal organisation and working of the woollen industry were controlled by an elaborate system of laws stringently enforced, which make a very interesting study.

Employers were a privileged class and laws were enacted to enforce the fulfilment of contracts of labour. The interests of the employees were also to be safeguarded in the way of proper payment of wages.


(3). Public general statutes affecting Scotland, 1707-1847, Volume I. As long as there was work for the artisans in the burgh, they were not allowed to leave it on pain of imprisonment. In 1725 an act was passed "to prevent unlawful combinations of workmen employed in the woollen manufactories and for better payment of their wages"...to prevent their quitting service as "woolcomber, weaver, or servant in the art and mystery of a woolcomber or weaver" before the time for which hire expires; for punishment, to be committed to the house of correction unless a reasonable excuse was forthcoming. The work was to be done properly; should the employee "wilfully damnify, spoil or destroy, any of the goods, wares or work committed to his care" he was to pay double the value; which was to be levied by distress or sale of goods and chattels.

(4). Above act, besides another passed in 1756, provided that the payment of wages be made in money and not in kind--
Other detailed laws were brought into force and stringently enforced to keep the level of honesty and business morality high.

Continued from overleaf.
(4) "Every clothier, serge maker, or woollen and worsted stuff maker, or person concerned in making any woollen cloths, serges, or stuffs, or any wise concerned in employing woolecombers, weavers, or other labourers in the woollen manufactory...shall pay in good and lawful money and not in goods or by way of truck". The agreements to be binding on both sides; should the clothier not pay the wages within two days after delivery of the work, a fine of 40 shillings to be exacted from him. Wages were to be fixed, and no stealing of workmen from the factories was allowed.

(1) Acts of the Parliament of Scotland to 1707. Public general statutes affecting Scotland 1707-1847. In 1469, woollen cloth to be measured by the rig and not by the selvage. 1641 wool to be washed on the sheep's back before it is clipped, sheep to be washed with keel and not with tar; persons who wet and dirty wool in order to increase the weight to be punished, because the filthiness of the same is a great prejudice to the workers thereof and causes the wool or yarn to rot in a short space. 1661 woollen cloth not to be made under 1½ ell in breadth. Punishments for regrating and forestalling wool, and for concealing stones etc. to increase the weight. A mark or seal to be placed on the woollen cloth to ensure a standard quality. In 1734 an act passed for the "more effectual preventing of frauds and abuses committed by persons employed in the manufacture of hats and in the woollen, linen...etc". The frauds are described as to "purloin, embezel, secrete, sell, pawn, exchange, or otherwise illegally dispose of" or "reel false or short yarn". The offender or any persons who "buy or receive accept or take by way of gift or pawn pledge or sale" ends of yarn, wefts, thrums, short yarn, and other refuse of cloth, drugget
Everything was done to encourage the woollen industry and persons possessed of either capital or technical knowledge were encouraged to settle in Scotland to found new industries and encourage existing ones. In 1584 skilled woollen manufacturers brought from the Low countries to Edinburgh. Later Dutch weavers were brought to Dundee, Perth, and Ayr. Even at the beginning of the 19th century when the Crombie Mills at Aberdeen found it difficult to compete in woollen manufacture against England, they encouraged the English operatives to settle in the county and manage the different departments, teaching the local labourers the different operations.

Continued from overleaf.

(1) and other woollen goods and goods mixed with wool, knowing them to have been embezzled, liable to the same punishment. Other frauds enumerated, as secreting, selling, illegally disposing of the working tools; the weavers taking the biers out of the chains, and withholding part of the woof or abb yarn; pickers, scribblers and spinners embezzling part of the wool and yarn; damping steaming and watering the residue in order to make up the deficiency in weight, and removing the stamp from the cloth.

(2) Statistical Account of Scotland by J. Sinclair, 1845, Volume 12 (Aberdeen), Parish of Fintray.
With the extensive use of power driven machinery and the localisation of industries in special areas, hundreds of men, women and children from the country-side drifted into towns, industrial areas and coal mines -- Glasgow and Clyde area, Stirling, Aberdeen, Edinburgh, and the area round Ayr etc. The effect was first the creation of slums, and then unemployment.

The cottage industry was hard hit by the use of power driven machinery. A number of hand workers, who could not adapt themselves to the new methods, were thrown out of employment, and many women who used to carry on woollen manufacture as an occupation, found they could not make sufficient money. Galashiels used to employ about 250 women ay spinning in 1790, but by 1832 there was not one even. (1)

At Airth in 1840 there were from 300 to 400 handloom weavers who were in a depressed condition. They were industrious, working long hours from 6 a.m. to 8 p.m., and yet they earned only a miserable pittance -- the average of their earnings after deducting expense of light, shop rent, carriage and agency, came up to 6 shillings a week. As the report says, the weavers were only too thankful to be able to provide the bare food and clothing for their families. At Methlick in 1840 women made 3½d. or 4d. for the knitting of the very stockings which formerly fetched 2 to 3 shillings a pair. (3)

In other areas women took to embroidery work for the large firms, and earned a very small wage. Dairy employed a considerable number of women at sewing and embroidery, working for Glasgow and Paisley merchants, who worked 14 to 16 hours a day, at the rate of 1d. an hour.

Thus there are many instances of the misery of the handloom workers in the accounts of the 19th century. The depression was further accentuated by the fact that the old gild regulations had become completely inoperative, while state legislation did not extend to home workers till recently, and that, too, only on paper. The industry was carried on unrestricted under every sort of conditions, hence the low quality of the work produced. The factory system spread sure and swift, and the only hope of the cottage worker lay in a constructive programme.

The forces working for the revival of the cottage industries at the end of the 19th century, and the beginning of the 20th century, rested on a basis of sentiment and nationalism. Meetings were held in Scotland to provide capital for teaching Gaelic and to preserve the old inherited arts and crafts. The wearing of homespun was encouraged on patriotic grounds, as is seen from the advertisements for hand-made goods — "When you buy goods from the Highland Home Industries......you help the peasants and crofters of the West Highlands and Islands to live. In so doing you help to keep burning the flame of the oldest industries in the country — the spinning, knitting and weaving industries of the Highlands". Attempts were made to bring the hand-made tweeds into fashion. The Ruskin movement combining the artistic and economic aspects, and the 'back to the land movement' greatly increased the demand for hand-made articles. Numbers of ladies and

gentlemen tried to help their tenants and neighbours by finding a market for their goods, but the method was a precarious one as far as the workers were concerned. This led to the formation of voluntary associations like the Highland Home Industries Limited, and the Scottish Women's Rural Institutes which were patronised by the rich folk of the land.

In this revival there was no idea of competing with the great factories of Bradford and Huddersfield, for the market being catered for was entirely different. For a while, the demand from the London tradesmen came pouring in, and it was thought it would last; but fashion and sentiment are too transitory for the basis of an industry. The voluntary bodies, no doubt, are doing a great deal of valuable work by finding a market for the products, improving the quality of goods, circulating information, keeping the producers in touch with the markets, and paying a fair price for labour. Their aims, though plausible, have rather hindered the development of free and healthy competition by keeping the prices low and consequently the profits. Keen commercial competition is necessary for keeping up the quality of goods, for its ultimate test is the quality of the goods produced. Philanthropic selling agencies do not help matters; many a person who would not otherwise buy the articles, purchases them at the exhibitions to help the struggling cottage workers. This tempts many an untrained and unscrupulous worker into the business, lowering the moral tone and level of work, thus unconsciously extending an invitation to competition of machine manufactures. This need of a commercial agency on co-operative lines was partly met by the formation of the Co-operative Council of Highland Home Industries. Still the workers are very poor with little capital, thus often preferring to sell their goods to merchants at lower profits for ready money, than send to the Co-operative depots and wait for higher profits.
THE PRESENT CONDITION OF THE INDUSTRY.

(a). STATISTICS.

At present the cottage industry forms a very small part of the industrial organisation of Scotland. According to the Census returns for Scotland for 1921, out of a total of 44,219 persons (page 137) engaged in woollen manufacture, only 2014 (4.5%) are working on their own account (page 137), as follows:

<table>
<thead>
<tr>
<th>Profession</th>
<th>Men</th>
<th>Women</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wool worsted &amp; sheddy</td>
<td>98</td>
<td>435</td>
<td>533</td>
</tr>
<tr>
<td>Hosiery &amp; knitted goods</td>
<td>40</td>
<td>1426</td>
<td>1466</td>
</tr>
<tr>
<td>Carpets &amp; rugs</td>
<td>14</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>152</td>
<td>1862</td>
<td>2014</td>
</tr>
</tbody>
</table>

Hosiery knitting and tweed manufacture are the chief occupations, and are carried on only in the north of the mainland of Scotland, the Northern Islands (Orkney and Shetland), and the outlying Hebrides. Places where the rocky nature of the land -- in certain parts, the islands especially, every inch of cultivable soil has to be carried up in baskets from the sea by the natives during March and April -- and the inferiority of the soil, combined with the extreme cold and the long Winter evenings, compel the inhabitants to have recourse to a side occupation to supplement their earnings.

This bye occupation is usually in the form of fishing for men, and woollen manufacture for women. The statistics for 1921 regarding persons working on their own account in the manufacture of textiles, show that woollen manufacture is the main cottage industry employing 85% of

(1). Census of Scotland, 1921 -- Volume IV -- Table 12.
Over and above these, 2014 persons registered as working whole-time on their own account in woollen manufacture, there are hundreds of small independent workers who work on wool in their spare time.

The manufacture of woollens is essentially a woman's occupation, employing 1862 women out of a total of 2014 persons working on their own account in woollen manufacture. The use of the word 'spinster' for a maid indicates the general prevalence of the occupation of spinning among the women, especially the unmarried ones. This characteristic of the manufacture of cloth is noticeable even in the factory industry, where twice as many women as men are employed. Weaving, being strenuous, is usually a man's work, but in Harris even this is done by women. Knitting, too, has always been female labour -- employing 1426 women out of a total of 1466 hands engaged in hosiery and knitting (page 158). Occasionally old and disabled men also engage in processes preliminary to knitting and weaving.

(b). LIVING CONDITIONS.

Enthusiasts give glowing accounts of the rocky Highlands, the shaggy rocks, and the cultivated slopes,
where the cottages of the labourers, the fishermen and the artisans are widely scattered, dotted everywhere with sheep, grazing on the mountain side, in the chasing shadows of sun and clouds. The conditions under which the homespun tweeds are produced are described as -- the scent of autumn heather mingling with the peat smoke from the scattered homesteads, curling out to the wide spell of the Atlantic; the bare hill tops bathed in the mist of a passing shower; the covey of grouse whirring to the hollow by the deep swift Salmon River, and beyond in the glorious rainbow light of the August sunset the startled listening hinds on the white sands silhouette against the sky line.

Cloth manufactured under conditions such as these, always conjures up the picture of a cottage hearth, under a thatched roof, in a Highland glen, or a bare hillside, on a long Winter evening, with the family circle complete, talking singing and reading, while they work at carding spinning or knitting by the peat fire.

Some cottages are fresh, airy, and well-lighted, while others are dark with the thatched chimneyless roof sheltering not only the weaver and his family, but with a door separating only his cow and fowls, together with all his belongings. These cabins are called 'black cottages' and are so low that the roof almost touches the head while standing.
This life appeals to some who are content with pleasure spread over a long life, and who can appreciate the simple mild yet satisfying things of life. They live free and independent, making work a pleasure and a play; the "waulking party", the spinning gathering, and the "cairdin" are not merely devices to complete the work but are occasions for a social merrymaking. Yet there are others who would rather have a short life but gay, full of concentrated pleasure, for these butterflies ever in pursuit of fresh excitement the town is the most appropriate place. Both have their own fascination, romance and individuality, and appeal to different temperaments.

A computation of earnings on a piece work basis for this industry alone (page 127, 128 and 129) gives low figures, comparing badly with the same grade of labour in towns. The estimate should be based on the domestic system, taking the family earnings as the unit of measurement by adding up the contribution of each member to the common family fund. The man provides the necessaries by working on his farm, his croft, or his fishing; while carding, spinning, weaving, finishing, and knitting of woollens are carried on mainly by the women of the house as side occupations. Women with a great deal of free time are enabled to provide pocket money for themselves, or luxuries for the family. Often the crops are poor, or the fishing slack; then it is that the manufacture of woollens is taken up as a bye occupation to augment the family income.

(c). ORGANISATION--AIMS AND METHODS.

At present there are three competing marketing bodies. Firstly, the small merchants who live in the place and buy up the articles when finished, sometimes supplying the raw material as well as the design and colouring. Secondly, the large firms with depots in the principal towns (e.g. the Scotch Wool and Hosiery Stores etc.), having agents at the places where the hand made articles are produced, supplying the materials and sometimes the
machinery. The workers are in the nature of hired employees working at piece rate wages as in the manufacture of the Portree and Islay tweeds. Thirdly, the Voluntary Bodies like the Scottish Women's Rural Institutes, The Scottish Home Industries Limited and The Crofters Association, which often supply the wool, the design and the colouring.

The private commercial concerns do little outside of pure collection of material and its sale for profit. But the efforts of the Voluntary Bodies have had far reaching effects on the cottage industry and are worth considering.

The main purpose of the Scottish Women's Rural Institutes is "to improve and develop conditions of rural life by providing centres for educational activities and social intercourse". They are purely voluntary concerns, but are beginning to realise the value of commercialisation as will be seen from the following extract. "The increasing skill and output of the institutes are creating a problem in Economics for which it will be difficult to find a solution within the original aim of the organisation. Since the products of craftsmanship must be disposed of it is inevitable that the trend of craftsmanship must be towards commercialisation, and this is desirable only so far as it helps to fasten the spirit of craftsmanship, the value of which, to the community, is educational rather than commercial". These institutes form a network connecting the whole of Scotland. Scotland is divided into five main areas: North West, North East, Central, South East, South West, with organisers offices in each place controlled by a central council.

The aim of the Highland Home Industry Limited is to pay as much as they can to the workers and to sell as cheap as they can to their customers. They do not work for a profit but only add to the cost of material and makers time, sufficient to cover the running expenses of their depots. They endeavour to pay their workers in full, one month after receiving the goods and run the risk of not disposing of them. The work is carried on on co-operative lines, but more in the way of philanthropic co-operation, rather than commercial co-operation. The general council controlling the organisation comprises representatives from all the Highland Counties.

The methods of encouraging the industry adopted by these associations are very instructive, and of great value educationally. Lectures are given by specialists in the different handicrafts in the various centres. Regular classes are held in different places during the year. At the close of each class tests are given in knitting, sewing and embroidery, leather work (soft and tooled), renovation and mending, cooking, laundry, basket making, raffia etc. The articles for entry are specified, and the points to be judged are mentioned for each article. A constructive criticism of the work is issued. Demonstrations are frequently given, even in the outlying places like Shetland and Harris. Exhibitions of work are held at London in Winter, and at Aberdeen in Summer (during the 'seasons'), as well as at the county agricultural shows. Exhibits are sent to other countries, competitions held and prizes awarded. Special designs and colours are manufactured for hunting, golfing and sports, so as to attract the visitors and the rich American tourists.

(1). Compare Reports of the various districts in the Home and Country Magazine.
The future relation of the cottage to the factory industry is not easy to predict exactly. The nineteenth century witnessed the drifting of the workers from the countryside into the crowded industrial areas and rapid increase of factories, with a consequent decline of rural industries. The attempt to prop the cottage industry on the flimsy foundation of fashion and philanthropy failed, showing the necessity of commercial co-operation. The problem of the present century is to turn the drift back to the land. The whole problem is bound up with the future of agriculture, as cottage industries are of greatest value when carried on as subsidiary or bye occupations. At present, it is very difficult to give any statistical facts regarding the nature and extent of hand manufactured woollens, as the trade just goes on as the articles come in, while the manufacturers work on, according to their time and need. A private attempt at collection of statistical material is thus sure to be a failure. Taking generally the impression from woollen manufacturers and merchants is that hand made woollen goods are coming into the market in larger quantities daily.

Morally and socially, cottage work is healthier than factory work, as it fosters independence, giving free play to individuality and initiative. The encouragement of indigenous industries strengthens the national resources. The aesthetic and practical appeal of the homespun has brought it into greater demand, especially since the rise to popularity of athletics, sports, fishing, and hunting as part of a holiday making and even daily routine. The lasting and damp resisting qualities of the cloth, together with its lightness and warmth, make it stand wear and tear; while the rough marked designs with the mixed colourings perfectly harmonise with the natural surroundings of an outdoor life -- a setting where the delicate shades and fine
Texture of the machine made stuffs would be entirely out of place. There is further demand within the country -- mass production by increasing the national wealth, has created a class with the means to purchase, and the taste to appreciate the uniqueness and individuality of rare hand manufacturers. America is another market for serious consideration, as even at the present time a great quantity of hand made goods in Scotland are manufactured to order from America.

The demand is likely to expand quickly, but the supply is not so easy to increase in a short time. The processes in the manufacture of the different articles are skilled processes, requiring skill, training and practice. They need a certain amount of apprenticeship, and are not like factory work, where the more a machine becomes automatic, the less the need of specialised mechanics, and the greater the demand for a supervisor -- a man with wide general knowledge. The cottage industry in future will not necessarily consist of rural hand manufactures (as popularly understood at present), but will spread to towns, with the development of hydro-electric power and its consequent cheapening per unit, making it possible to have small independent industries like hosiery making etc. in the home.
Chapter Five

Labour in the Punjab.

1. Labour and its Distribution.

2. The Cottage Industry.

3. The Domestic Industry.


Summary: The Punjab is unique among rural areas, where rural industries have a distinct position in the industrial scenario. The majority of the population engage in agricultural activities, and a small proportion work in cottage and domestic industries. The cottage industry is significant, and its impact on the factory industry is noteworthy. The domestic industry also plays a role in the overall economy.

Section 1: Labour and its Distribution

Section 2: The Cottage Industry

Section 3: The Domestic Industry

Section 4: The Impact of the Cottage and the Factory Industry
Chapter Two

LABOUR IN THE PANJAB.

I. LABOUR, and its Distribution

Summary

The Panjab is mainly an agricultural Province, where rural industries hold a distinct position in the industrial economy. Manufacture in factories engages only a small proportion of the people. The supply of labour available for the mills is determined by the demand of agriculture for it, and not according to the demand of the factory. There is no sharp distinction between the labouring classes, and the people from whom they emerge; nor is there yet a distinct wage-earning class. The majority of labourers still retain their homesteads, (and some even own land), returning to them at intervals. They do not depend exclusively on wages, which makes them slack in work, and irresponsible. In factory areas, the labourer is generally inefficient, and the amount produced per head is small, owing to the low proportion of literacy (3.3%). He works long hours for a bare subsistence wage, and he is untrained, uneducated, and unskilled. The quick labour turnover makes it impossible for the worker to rise above the situation. His environment leaves much to be desired, physically and morally. But among the cottage workers, working conditions are much more healthy and natural, though a great deal could be done to raise the standard of living of the average worker.

(1) Census of the Panjab, 1921; Vol. 2; Table VIII. 967,943 being literate out of 25,101,060 persons.


DISTRIBUTION OF LABOUR AMONG THE VARIOUS INDUSTRIES.

According to the Census Report for 1921, the total population of the Panjab is 25,101,060 persons:

- Actual workers: 9,065,186
  - Male: 8,039,915
  - Female: 1,025,271

- Dependents: 16,035,874

Total: 25,101,060 persons.

The actual workers as distributed among the various industries are shown on page 168. A study of these statistics shows that the Panjab is mainly an agricultural Province, employing 50% of her population directly in agriculture (6,313,859 in agriculture out of a total of 9,065,186 actually working in the Province).

If to this is added another 10% indirectly engaged in agriculture and partly employed in industries, the total comes up quite high. Industry (manufactures) account for only 20% of the total actually employed (1,793,162 in manufactures out of 9,065,186). Only 11% of the actual workers are women (page 168, being 5% in agriculture, and 4% in manufactures.

Considerable controversy has raged round the question of agriculture versus industry. It is the belief of certain economists that the diversion of labour from land to industry will result in a diminution of total productivity. Others argue that nature meant her to be an agricultural country, therefore industrialism...
## Distribution of Population among the Industries 1921

<table>
<thead>
<tr>
<th>Industries</th>
<th>Men</th>
<th>%</th>
<th>Women</th>
<th>%</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Production of Raw Materials</td>
<td>4,888,701</td>
<td>53:57</td>
<td>4,84,748</td>
<td>53:55</td>
<td>5,223,449</td>
<td>58:72</td>
</tr>
<tr>
<td>1. Agriculture</td>
<td>4,830,170</td>
<td>53:28</td>
<td>483,569</td>
<td>53:23</td>
<td>5,313,859</td>
<td>58:61</td>
</tr>
<tr>
<td>2. Mining</td>
<td>8,531</td>
<td>1:09</td>
<td>1,059</td>
<td>0:2</td>
<td>9,590</td>
<td>-11</td>
</tr>
<tr>
<td>3. Fishing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Preparation &amp; Supply of Foods</td>
<td>2,177,987</td>
<td>24:01</td>
<td>382,344</td>
<td>4:20</td>
<td>2,560,331</td>
<td>28:21</td>
</tr>
<tr>
<td>5. Industry (Manufacture)</td>
<td>1,448,632</td>
<td>15:97</td>
<td>344,730</td>
<td>3:6</td>
<td>1,793,362</td>
<td>19:77</td>
</tr>
<tr>
<td>6. Transport</td>
<td>179,261</td>
<td>1:97</td>
<td>4,480</td>
<td>0:04</td>
<td>183,741</td>
<td>2:01</td>
</tr>
<tr>
<td>9. Professional &amp; Liberal Arts</td>
<td>1,032,999</td>
<td>11:34</td>
<td>29,346</td>
<td>3:2</td>
<td>1,062,345</td>
<td>11:56</td>
</tr>
<tr>
<td>10. Miscellaneous</td>
<td>6,46,877</td>
<td>7:11</td>
<td>137,456</td>
<td>1:51</td>
<td>783,333</td>
<td>8:62</td>
</tr>
<tr>
<td>11. Miscellaneous</td>
<td>226,286</td>
<td>2:49</td>
<td>52,619</td>
<td>0:58</td>
<td>278,905</td>
<td>3:07</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>8,029,915</td>
<td>88:64</td>
<td>1,055,271</td>
<td>11:369</td>
<td>9,085,186</td>
<td>99:449</td>
</tr>
</tbody>
</table>

### Notes
- Transferred from one industry to another:
  - Agriculture to Mining: 2,011
  - Transport to Trade: 26,20
- Total Trade: 587
- Domestic Services: 5,62
- Miscellaneous: 1,333
- Professions: 2,56
with all its evils should not be forced on her; still there exists a group in favour of immediate and hurried industrialisation. The best policy lies in a wise middle course of general reconstruction. Agriculture must have special attention, not only as the staple industry, but in order to create a firm basis for progressive industrialisation. They are not necessarily competitive forces, but can cooperate towards the one aim of national welfare. The growth of manufactures will not harm agriculture, but rather act as a stimulant, creating an increased demand for better raw materials. The excessive pressure on land demands new outlets, and will be eased by diversion to industries. Thus the cry for industrialisation is a rational outcome of this pressing economic necessity. The labour at present wasted will be put to a useful purpose, for there are great potentialities in the hitherto uneducated strength of her millions. In the modern world, no nation can afford to stand aside and watch. If her own people will not rise to the occasion, and bring her up to the modern recognised standard, foreigners will come and exploit her vast natural resources (which still lie untapped) and carry all the profits away from the country. Lastly it must be kept in mind that the evils which accompanied the introduction of the factory system in Britain were not inherent in the system itself, but were due to the special circumstances of the time. Thus India can reap the benefits of industrialisation, without the evils, by adopting a policy of wise discrimination.
DISTRIBUTION OF LABOUR AMONG THE VARIOUS MANUFACTURES.

Taking the figures of those actually employed in manufactures in 1921 from the Census Reports, we find that textiles employ 22\% \(\frac{400,358}{400,258}\) persons, and dress and toilet employ 35\% \(\frac{441,305}{1,793,162}\), out of 1,793,162 engaged in manufactures.

THE WOollen INDUSTRY.

There is little differentiation of occupations in the Panjap and still less in the villages, so that a close comparison with Scotland (where each definite craft is followed by specialised workmen) is not possible. In the towns there is division of labour to a certain extent, but even here the mass of artisans work not in factories or for capitalists, but on their own account.

I have tried, as far as possible, to follow the same classification as for Scotland. I have taken the statistics of Table xvii (Census of the Panjap, 1921) of occupations as referring to cottage industries, and turned to the Miscellaneous group for the factory industry, the details of which are to be found in Table xxii Industrial Statistics. The two inquiries were carried out at different times - the second special industrial census having been taken two months after the general census. The statistics are not very definite, as the compilers of the report themselves admit that "among the insufficiently described occupations, there are a certain number of persons who should be shown under the sub class of trade and industry."

Thus I have taken the statistics from the Census Report supplementing them from the returns of the Department of Industries. In the case of the cottage industry the dependants are included, as they help in the work. But for the factory industry only the actual workers are stated.

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1 Census of the Punjab India, Vol 15 - Punjab. Part II. (1921)
### DISTRIBUTION OF POPULATION IN THE WOOLEN INDUSTRY

#### THE RAW MATERIAL engages, actual workers 75,816
- Shepherds: men 65,346, women 3,858
- Breeders of sheep: men 5,048, women 265

#### THE MANUFACTURE OF WOOLEN engages, actual workers 9,005

1. **COTTAGE INDUSTRY** actual workers 4961, dependants 6632
   - men 263, women 9048, dependents 4981
2. **FACTORY INDUSTRY** engages actual workers 4,037
   - Hosiery Works: men 114
   - Carpet Factories: men 439, women 2
   - Woollen Mills: men 2,332, women 94

#### Wool carding and Spinning
- 271 men, 537 women, 389 dependents

#### Professional Weavers
- 1000

#### Blanket Weavers
- 2922 men, 184 women, 6084 dependents

#### Shepherd blanket weavers
- 56 men, 1

#### Small carpet factories
- 199 men, 11 women, 355 dependents

---

1. The statistics for the COTTAGE INDUSTRY were taken from the Office of the Director of Industries for the quarter relating to the year 1921, as the census reports do not give sufficient detail for adaptation to the Thesis. The statistics for the FACTORY INDUSTRY were collected from the records books of each factory for that year, after personnel visiting each mill and being compared with the return in the office of the Department of Industries, and as far as possible, other authority can be quoted as there are no publications on the subject. The data can be verified by deductions from the Hampden District Gazette and Census Report.
2. THE COTTAGE INDUSTRY.

The Punjab is mainly an agricultural Province (page 247), with a rural population of 18,472,033 in against 2,212,191 persons in towns; hence the importance of cottage industries in her industrial economy. The majority of the people are private industrial workers, each man beginning, carrying on and completing the articles which he produces. In the village the different crafts are not even followed by different craftsmen, hereditary castes, whose occupation is the one they follow carry on the work. One man combines the tanning and working in leather, with general coolie work; another combines blanket weaving with agriculture, and still another carries on woollen manufacture while he is on leave from the factory. Everyone or almost everyone works in fields either continuously or at certain seasons, hence it is interesting to make a general study of that aspect of the economic life of the people.

Agriculture is a question of water, manure, and cattle. The holdings are small, being equally divided by the law of inheritance. Until the recent extension of irrigation, the success of the harvest depended entirely on the rainfall. Ignorance and illiteracy have retarded the agriculturist from reaping the benefit of improved methods; and poverty has been a great handicap in the purchase of expensive machinery. The soil though fertile is ploughed only from the surface, and is getting exhausted for want of fresh manuring. The manure which should go to renew it is burnt as fuel, night soil is not used owing to caste prejudice, and bones are allowed to go to waste, while oil cakes are exported as cattle feed.
food. Cattle do not receive the necessary attention, perishing by the thousand in times of famine and epidemic, as farmers simply let them graze on commons and fields, making no definite provision for their fodder.

In the majority of places two crops are reaped in good seasons, one in April and May and another in October and November. Thus the busiest time of the year are the six months of April, May, October, November, December, and January. During these months ploughing, sowing, irrigating and reaping call all hands to work. Over and above this the ripening crops have to be watched, the animals kept away, the cotton picked, the sheep shorn and the wool stored up. For these six months labourers are engaged in hard toil between eight and thirteen hours a day, but the other half of the year nature does not demand hurried labour. Short periods of heavy work alternate with long seasons of leisure. No fixed hours of work are observed, and the working day is an irregular one; with no special demand they vary with the passing mood, interrupted by frequent rest intervals. In his book on the "Economic Life of a Panjab Village" Dr Lucas, after a detailed calculation, estimates that a farmer works between 160 and 200 days in the year only. The rest of the time is either wasted in loitering about, or employed in a subsidiary occupation. Thus agriculture rivets the man to the soil, preventing him from leaving the land, and yet provides employment only part of the year, hence the necessity of a bye occupation. The problem is very important, and needs careful attention — if 30% of the people waste half the year in unproductive work, how can the country ever hope to compete with other nations.

O. Economic life of a Panjab Village - E.D. Lucas
The most important cottage industries are those connected with the spinning and weaving of cloth. In the warmer regions cotton is cultivated, and then manufactured into cloth, while in the cooler regions sheep rearing is combined with woollen manufacture. The wool industry of the Punjab is mainly a cottage industry employing 75,016 actual workers in the production of the raw material, and 4961 persons with 6633 helping dependents in the manufacture of woollens in the cottages. (page 171).

Out of the 75,016 persons returned as shepherds and breeders of sheep and goats, 70,894 are men and 4122 are women, who are actually engaged on the work. Besides these there are many shepherd farmers who are mainly agriculturists, carrying on sheep breeding and wool manufacture merely as a subsidiary occupation. Their small flocks of about fifty sheep, are kept mainly to provide the family with warm clothing.

The sheep breeders are shepherds and weavers in the first instance, but carry on agriculture as a secondary occupation. This work is done by the 'telis' and 'gujars' of the plains, and the 'gaddis' of the hills. The 'telis' and the 'gujars' are mainly Mohammedans in the Rawalpindi and Jullundher Districts, while just about a third are Hindus in Ambala District. The 'gaddis' of Kangra and Chamba are a semi pastoral and semi agricultural race, and Hindu by religion. They reside exclusively upon the snowy range dividing Chamba from Kangra -- a height of from three to seven thousand feet -- coming down to the valleys of Kangra, Suket and Mandi for the winter months. They own large flocks of a thousand sheep, and sometimes more. Three or four men and several dogs
accompany the flock, which camps out night and day all the year round. If a man owns many head, he takes with him one or more 'bowal' or hired shepherds, but commonly the men with a flock are all of them part proprietors. If a man has very few sheep, he does not go himself, but gets a friend or kinsman, who is going to take them, with his own. They own in addition to their large flocks, a few cows and oxen too. Some have private property in land, and pay a nominal land tax; but the majority are masters of the hills, free to cultivate any area, graze any pasture, or pitch their temporary houses in any plot, merely paying a small tax per head on their sheep, to the state in whose territory they happen to sojourn. They build temporary houses on hillsides, usually two roomed and double storeyed. In one room they keep their cattle, while the upper storey is the living room, containing their utensils (all of brass) and their clothing (all homespun woollens). They make little jewelry, and few clothes, but all they possess in the way of money and valuables is deposited in holes built inside the wall. Being Hindus they subsist mostly on vegetables and milk. Sheep rearing and wool manufacture are their chief occupations — the women spinning the yarn and the men weaving it into cloth. Agriculture is only a secondary employment, carried on during the three winter months on the lower mountain ranges. Every member of the family contributes his share to the family labour, from the baby collecting sticks for firewood to the oldest member helping about the house.

It is here that women's labour is of the highest importance, as we pass from the cottage through the
domestic to the factory stage, their numbers gradually dwindle. The extent to which women take part in the fields varies from village to village, according to the local social customs. Their chief occupation is the management of the home, preparation of meals (which is a fine art in itself), pounding the rice, grinding the 'masaloh' (spices), cooking the bread fresh for each meal, and sewing; while the spare time is devoted to the preparation and spinning of yarn for being woven by the men. In former years they ground the corn for the household also, and the 'chakki' or grinding stone was a necessary item in the house; but since grinding machines have come into use they have been saved that labour. In some districts they are little seen out of doors, in others they help during the very busy season; while there are some places where they sow the seed (being reckoned suspicious), mind the cattle, pick the cotton (which when it is ready is entirely handed over to the women of the house to collect) and help in watching over the ripening crops.

Until recently the village was a self-sufficient organisation, complete in itself, with a whole equipment of artisans and menials whose duties were fixed by custom, and remuneration was in kind. But the improved means of communication have broken down the isolation of the village, opened up larger markets for purchase and sale, raised prices of certain articles, stimulating production in some cottage trades, while at the same time adversely affecting other branches. Machine production has superseded hand made goods for the ordinary middle quality of cloth, but at the two extremes hand manufacture has held its ground. The coarse blankets 'lohis' and
'dihuas' continue to be made on the handloom, as they mainly serve the local demand, where the weavers know the tastes of their customers. Also because at the present stage of progress, when the labour is cheap and machinery very expensive, a heavy outlay on machinery for the manufacture of these coarse articles would not make a profitable investment. At the other end are the costly manufactures like carpets, shawls, and pashmina goods, the very essence of whose value consists in their uniqueness, individuality and hand labour. The demand for them is not sufficient to justify factory production, and even if the demand was great their subjection to mass production would destroy the very qualities that give them value. The hand worker in general has been hard hit by the influx of machine made goods. The population actually supported by woollen manufacture has decreased to a third since 1901. In 1901 about 32,361 persons were returned as engaged in wool carding and spinning, and weaving of woollen blankets and carpets in the Panjab; in 1911 the number was 17023; and at present according to the figures for 1921 it is 11,609 (page 177) -- these statistics include the actual workers and their dependents. The cottage worker has fought desperately to hold his own, working excessive hours for a bare subsistence wage. In the end he has been forced either to resort to land and agriculture (which are already overcrowded) as his main support, or to join the swollen ranks of unskilled labour in industrial areas.

As the sentiment round 'homespun' in Scotland and America, so in India the Swadeshi movement has created national unity, and a strong desire to improve the indigenous industries of the country. The Swadeshi
Movement of 1905-07 and the Khaddi Movement of Mahatma Gandhi, have had far reaching influence in bringing the home industries before the notice of the public in general, resulting in an increased demand for home manufactured clothes. The boycott of foreign goods, and the ban on the use of machinery in general (and spinning and weaving in particular) may seem a new form of the old Indian conservatism against new things, at first sight. It may appear as a backward step, as an ideal goal, and even less justifiable than Rousseau's social and moral aspects of civilisation, and his cry "Back to Nature"; especially when it is raised against discoveries and inventions in the physical realm. Man must progress ever pushing forward discoveries, and taking up the thread of progress from the last highest point in the upward journey, if he aims at success. These were not the considerations guiding the policy, neither did it aim at retarding industrialism with its monotony and loss of individuality. It was devised with a deep insight into the peculiar conditions prevailing in India, and if applied with discrimination, even the wisdom of S6Tomon could not have suggested a better plan of action. Seventy per cent of the masses in India and eighty per cent in the Panjab, are directly or indirectly connected with agriculture. Their extreme poverty is due not so much to the unequal distribution of wealth, as to the small production per head, The best of them find employment only half the year on their fields, while a great majority do not put in any more than four months of solid work during the year. In order to increase production some subsidiary occupation must be taken up during the slack seasons. The farmer cannot leave his land, ignorance and illiteracy
restrict his scope of improvement, poverty limits his means, so that he cannot invest in expensive machinery. He is thus in a vicious circle from which he cannot escape. A beginning must be made somewhere - the 'charkha' has been suggested as the first step towards the attainment of economic freedom, national independence and home rule. The 'charkha' and the 'khadi' (spinning wheel and the handloom) are still familiar to the people and within the means of the poorest man, yet they would assist in a valuable use of leisure, at the same time producing cloth and adding substantially to the low incomes of the workers. Progress does not culminate at this stage, for it must lead to greater enterprises, mass production, and aggregation of industry. The true significance of "swadeshi" is loyalty to one's own country, and the adaptation of the noblest ideas and best achievements of other nations to the needs of one's own country, in order to reach the maximum utility, and attain an all round development for the children of the soil.

The peculiar conditions and customs of the country require a careful handling, for economically the civilisation is based on agriculture and on small cottage industries. Though progress seems to be leading to the factory system and mass production, the importance of the cottage industries in the industrial economy of the country cannot be ignored. The general custom of the seclusion of women, does not allow them to go out of the home, much less work among strangers, and deprives the nation of half the working force. Then there is the agriculturist who is bound to the land and yet employed only half the year. Therefore, subsidiary industries
must be introduced in order to utilise the three quarters of the labour force which ordinarily goes to waste. There is great scope for the development of small independent businesses in the country and the town; with the increased availability of power progress will probably be in this direction. Cooperative Societies can do a great deal to help and educate the masses, morally and intellectually, fostering self reliance, foresight and independence. The peasant is usually in debt, and always in need of money, so that he would welcome a cooperative credit society. Other societies can organise and coordinate industries, keeping them in touch with outside markets, acting as advertisers of the goods, and central agencies for the purchase of raw material and the sale of the finished article.

N.B. The articles manufactured, the condition of the industry and its possibilities have been dealt with in detail in chapter 11 of the Thesis. Hence this section only treats of the general economic conditions of the cottage workers in wool.

In comparison reference may be made to the Taung District Gazette for its various districts and files.
3. THE DOMESTIC INDUSTRY.

Although the domestic or 'karkhana' system, has long prevailed in India, the present industries and factories manufacturing blankets, carpets, and pashmina goods date back only to the nineteenth century. The industry of Multan is more of a household craft, while in other places it is more of a factory industry, carried on by workers hired for wages. These establishments present all the problems of a modern factory -- the aggregation of workers in one place, and the marketing and undertaking of risks by the employer. Yet the workers are independent, working the same as in the cottage industry -- free to work any time, any how, any way, and with any one they choose. Only they must work at the factory, on the materials supplied them, to a certain design, for a specified time, for a contracted sum. Thus it is a halfway stage between the cottage and the factory industry.

The large carpet factories do not use power and employ 1431 persons, the smaller carpet factories engage about 465 persons (including 255 dependents), the hosiery works at Ludhiana employ 114 persons, while the blanket workers number over 2000 (the exact figures not being quite ascertainable). There are altogether 18 large carpet factories:

<table>
<thead>
<tr>
<th>Persons</th>
<th>Factories</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-49</td>
<td>4</td>
<td>153</td>
<td>2</td>
</tr>
<tr>
<td>50-99</td>
<td>3</td>
<td>226</td>
<td></td>
</tr>
<tr>
<td>100-199</td>
<td>2</td>
<td>272</td>
<td></td>
</tr>
<tr>
<td>200-399</td>
<td>3</td>
<td>778</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>13</td>
<td>1439</td>
<td>2</td>
</tr>
</tbody>
</table>
In early times stringent guild regulations controlled the industry, protecting the interests of the work, the worker, and the purchaser, and maintaining a high level of business morality. At present the industry is suffering from a lack of authoritative control. The old guild regulations fixing wages, checking quality of goods produced, limiting supply to demand, and settling disputes, are no more effective; while factory legislation has not been extended to these works. The Factories Act of 1922, brought under control all places of work using power driven machinery, and reduced the number requirement from 50 to 30 persons. Thus these factories employing entirely hand labour, did not come under this regulation. Another section of the same Act provides that all establishments employing more than ten persons, irrespective of the nature of power used be included under regulations but with the saving clause "at the discretion of the local government." Thus it is that investigation is still in progress, the conditions of the industry are being studied, and the government is contemplating the extension of the law in the near future to these domestic workshops. Regulation is sorely needed, not because the employees are over worked or ill treated, for a number of the employers have voluntarily adopted certain sections of the Factory Act; but because there are as everywhere, a certain proportion of the employers who do exploit the workers unchecked by any external authority.

In the carpet and pashmina industries of Amritsar, Multan and Ludhiana, almost without exception, the weavers and their helpers are Mohammedan by religion. According to the Batala Report, the workers at Amritsar are Kashmiris being descendants of the shawl manufacturers; their castes
go to prove the fact -- Mochi, Kashmiri, Arain, Rajput, Rajjan, Julaha, Sheik, Bharai, Hakrez, Feli, Barwa, Mirasi, and Moghal. The census classification shows that those at Malton are the descendants of settlers from Bukhara and Persia. -- Khaja, Chisti, Fatham, Pauli, Maulah, and Kiras. The blanket manufacturers of Panipat, Sajampur and Mirwali too are practically all Mohammedans, a few Hindus, sometimes Hashabi Sikhs also engage in it, as in Dad, a village near Ludhiana. Wool weaving in the case of a Hindu, is usually an occupation subsidiary to agriculture or sheep breeding as with the 'gaddis' of Kangra. The skilled work is done by the Mohammedans who have special castes engaged in the work, possessing the inherited art and design and trained up to the manufacture.

The Muslim workers being landless are on the whole poorer than the Hindu workers. 'Fardah' (the seclusion of women) is common among all the workers, especially the Mohammedan manufacturers. The women do the household work, but over and above that they cannot mix with men strangers, much less go and work in factories. Thus the burden of supporting the family falls exclusively on the men. For some time the carpet industry has been in rather a precarious state -- boom in manufacture, over crowding through the attraction of high prices, careless and hurried production, inferior quality of work, change in fashion of western markets, decreased demand and low prices resulting in still lower wages, have contributed to the poverty of the workers. Owing to ignorance and illiteracy they have not been able to rise above the situation, and comprehend the nature of the much wider world demand. They have got into debt, which has a knack of multiplying faster than it is paid off; while their women owing to
the social custom cannot supplement the low family earnings, for they may not go out to work. The conditions in the blanket industry are hardly any better — the low wages, the rising cost of living, and the competition of foreign machinemade substitutes, combined with the want of a subsidiary industry to fall back on, are all contributing to the poverty of the manufacturers.

The industries are financed mainly by Hindu capitalists, who supply the raw material (purchasing it wholesale at low rates, and selling at high prices, often above the market price), organise production, undertake risks of marketing, and enjoy the high profits. Blanket manufacture is almost entirely carried on by Hindu capital, and even in the carpet factories there is very little Mohammedan capital, although the workers are mostly Muslims.

The manufacturers in general are men of no capital, who work on money advanced to them by the capitalists. This system of advances to operatives has had a very demoralising influence on them. There is usually one outstanding debt known as 'baqui — 3.4. or balance, ranging between Rs 300 and 1,000, and another called 'kharach — 5.6' for current expenses. The 'kharach' is deducted from the wages at the completion of each contract, but the 'baqui' is hardly ever paid back. No interest is charged on the loan, but in former times it served to bind the workers to the employers for life, as they were never able to clear the debt completely. They were thus obliged to purchase the raw material from the capitalists at high prices, and market the finished article through them for a low remuneration. These capitalists make a profit of 75% (selling at Rs 7 that for which the
manufacturer was paid Rs 4), over and above the 50% profit on raw material. There was no chance of escape, and no inducement to earn more by improving the quality of the work, as all the extra earnings would have gone to clear part of the old debt only. At the end of the nineteenth century, due to increased demand, higher profits, and difficulty in finding skilled workmen, manufacturers gave advances readily. Workmen became unwilling to do a stitch of work until they received an advance on the contract price of the article, and after receiving the advance it was not always easy to induce them to do a work of an equivalent value. There was no law effective enough to bind them to the fulfilment of contracts, and the continual demand for services made it more profitable to leave the contract unfinished, and start afresh elsewhere, rather than carry it through to the bitter end. Finally the great loss involved obliged the manufacturers to combine in refusing employment to workers under obligation of service elsewhere. The industry now is on a much sounder basis, and is showing signs of improvement, while both the foreign and home demand is slowly increasing.

The looms are widely distributed, and generally one man owns a few. The manufacturers engage their own workmen, usually employing the male members of their own household. Thus the trade runs in the family, and the weavers are called 'kalin baf'. There are no legal restrictions about hours of work, recess, meal times, or holidays. It is usual to work through the natural day as long as there is light enough to see (i.e. about 14 hours in summer and 10 in winter), though a few factories voluntarily follow the hours of work.
enjoined by the Factories Act. The work is carried on leisurely, and meals are taken whenever there is a convenient stopping place in the design. The food is brought from home by the workers in the morning, and eaten either in the workroom or in the open yard.

Carpet weavers at meals in the shop.
Amritsar.

The workers being Mohammedan observe Friday as the weekly holiday. The work requires more mechanical skill than physical strain or originality. The designers or 'rangrez -- ', as they are called, graph out the designs, translating them into technical language (unintelligible to all except those in the trade), which is handed to the head weaver with the contract for work. The number of workers varies according to the width of the carpet at each loom; the average is about five to each loom (four of whom are boys), or one person to every eighteen inches. The workers are illiterate, so the head weaver while working reads the signs loudly, which are rhythmically followed by all like a drill.
Most of the factories are built on the edge of the city. They are housed in very long low buildings, several hundred yards in length, and about fifteen feet in breadth, being partitioned off to form the several shops. This long row of open compartments is an endless verandah, have a small open space running right along the building, separated from the rest of the only high wall with one gate for entrance. Each compartment or shop is fitted with a carpet loom 22 feet long and 8 feet high, placed slanting so as to allow more light. The office is at the entrance, the finishing department at one end, and the dyeing department the other end. Only a third of the looms are in use at the present time, for in one factory, only 70 out of 250 looms were at work, which shows the amount of work formerly carried on.

The conditions of work are fairly wholesome, for the sheds are open, fresh, well lighted, and properly ventilated. But the excessive hours of work, the squatting on the damp ground, and the bending position throughout the day, cramps the lungs, making the workers liable to consumption. The time spent at home does not counteract the strain, for it is spent in small crowded dark houses. Working all day under the careful eagle eye of the head weaver, and living in a crowded home naturally results in weak lungs and poor physique, accentuated more and more in each successive generation.

The head weaver works along with the employees, and like the designers, makes about Rs 50 a month, while the average adult worker earns about Rs 1/2/- a day i.e. Rs 54 a month. Boys serve an apprenticeship of six months, and earn from Rs 6 to Rs 10 monthly (roughly 7 annas daily).
most of them become master weavers when they grow up.
The work is carried on largely by the agency of children,
quite a number of whom are under the age of nine. This
problem of child labour needs immediate attention. The
Factory Act is not fulfilling its object, if the very
children it protects from working in regulated and
healthy factories, go on being employed under unregulated
conditions, at the mercy and caprice of every individual
employer. More prohibition by law will not remedy the
evil, as it will only encourage roaming and loafing on
the part of the children; it must be accompanied by
the provision of adequate facilities for education. A
legal limitation of working hours must go hand in hand
with compulsory education up to that age.
The only assistance to industry given by the state up to the War was in the form of regulation by legislation. But during the War it was realised how greatly the Panjab could have helped in the supply of materials for the Eastern Theatre, had she been industrially equipped. The Dhariwal Woollen Mills worked full time to equip the army, while the blanket resources were tackled to their utmost productive capacity, with the existing appliances.

Since 1913, it has been a period of constructive organisation based on purely economic considerations. The government has definitely accepted the principle of actively stimulating industrial and productive efforts by pioneering industries—e.g. the hosiery industry of Ludhiana. Funds are advanced for industrial purposes to assist new industries as in the hosiery works at Amritsar. An inspector to visit the different centres and introduce new methods and suggest improvements. Actual help is given by the government through giving priority to Indian woollen manufactures for supplying the army and the civil departments.

Legislation at present applies only to factories—manufacturing establishments using power driven machinery, employing over 20 persons. But it is left to the discretion of the Provincial government to extend the law to any other factories, using power of any nature and employing even up to 10 persons. Thus workshops, like the carpet manufactures, might be regulated at the will of the Provincial government.

The following woollen mills are regulated by the present Factory Act. These woollen mills employ 2432 hands, practically all of whom are men, only 94 women being returned as engaged in wool sorting. They are distributed
as follows:

<table>
<thead>
<tr>
<th>Woollen Mills</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lahore</td>
<td>58</td>
<td>-</td>
</tr>
<tr>
<td>Amritsar</td>
<td>120</td>
<td>22</td>
</tr>
<tr>
<td>Chheharta</td>
<td>500</td>
<td>20</td>
</tr>
<tr>
<td>Dhariwal</td>
<td>1710</td>
<td>52</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>2383</strong></td>
<td><strong>94</strong></td>
</tr>
</tbody>
</table>

The act at present in force is the act of 1911 as amended in 1922. The minimum age limit has been raised to 12 years, and regulations referring to children, apply to persons between the ages of 12 and 15 years. Children are not allowed to work more than 4 hours at a stretch, and 6 hours in all in a day. Working hours for both men and women have been made uniform, restricting their work to 11 hours a day, and clearly laying down that "no person shall be employed in a factory for more than sixty hours in any week". The Act makes a generous allowance for rest intervals. For adults, a period of rest of not less than one hour is prescribed at intervals not exceeding 6 hours, i.e. 1½ hours compulsory rest at mid-day. Night work is prohibited to women and children, by allowing them to work only during the hours between 5:30 a.m. and 7 p.m. Men employed at night are not allowed to work both day and night shifts continuously at a stretch.

Considering the working of the law and the problems of cottage and factory labour, we notice the following facts.
The hours of work are long, and there is great need of a distinction between the summer and winter working periods. The prescribed limit is very well for the long summer days, but in winter 5.30 a.m. is still part of the night, and by 7 p.m. darkness is thick all round. The workers have to come long distances, about an hour's walk from their homes (as there is no tram or bus service), before which they have to be awake at least half-an-hour in order to get ready and have their meal. So that they waken up about 4 a.m., start work at 5.30 a.m., work 11 hours (the maximum limit), getting an hour and a half prescribed mid-day rest, i.e. they are in the factory 13 1/2 hours--5.30 a.m. to 7 p.m. Both the Dhariwal and the Chhoherta mills work the entire allowed limit; though the managers say that the actual hours are not 11 but 9, as the work is not carried on continuously during the whole time they are supposed to be in the factory, taking several minutes off and on at different intervals during the work, for smoking or drinking water. Women workers have to rise up still earlier, as the morning meal has to be prepared and served before leaving the house, and the lunch cooked and packed for being taken to the factory--the earthen bowl, tied in a red handkerchief, is quite a familiar sight in any factory. Then the water has to be fetched from the well or the common tap, for which she must wait her turn. As the water supply runs during certain hours only (usually 3 to 10 a.m. and 4 to 7 p.m.), she has to do up all the washing for the day at that time, and store up sufficient water in earthen jars or 'gharas' as they are called, for the whole day, because there will be none in the tap when she returns
from the factory in the evening. She therefore has to rise about 3 a.m. to finish all this work in time for the factory; by the time she gets home it is 8 a.m., and then the house work keeps her occupied till 11 p.m. Thus the time limit for women's labour should be reduced, and can be done without loss, as they are piece workers. Although the woollen factories do not employ many women, the wool sorting factories are worked almost entirely by women. It has been found that the hour and half's interval in the middle of the day is not appreciated by women. Coming from great distances they cannot go home, and have to loiter about the mill; and being piece workers they grudge every moment that is wasted, preferring by far to be allowed to come late, and go away earlier, so as to have more time to spend at home. The problem is different to that of women's labour in Britain, where most women workers are single, for marriage is a general institution in the Punjab and practically every woman is married.

The long hours of work in no way result in an increased output, as naturally persons working at this rate, day in and day out, get tired, producing less and less each successive day.

The weekly rest day is a physical necessity, and was made compulsory by the Act of 1891, though the extent to which it was observed is better left unsaid. It was stated by the Factory Labour Commission of 1907, after an investigation into working conditions, that the average worker took two days off every month, and a further holiday of from three to seven weeks every year. These days were taken off without notice to employers, at any time, depending on the sweet will of the labourer himself. The law applies only to factories, but since 1922 the provision for a holiday is more generally observed. Usually Sundays are given as holidays, though in Amritsar carpet factories and establishments employing Mohammedan labour, Fridays are given as holidays. But when any festivals -- New Year, Christmas, Id-ul-Fitar, Moharram, Besakhi, Dusshera, and
Dewali -- fall during the week, work is carried on, on the prescribed holiday. On Saturdays the mills close early in order to clean machinery.

There is a very close connection between cottage and factory labour, so much so that the supply of labour available for work in the mills is determined by the demand of agriculture for it, and not according to the demand of the factory for it. Land offers only seasonal employment, so that for want of a bye occupation, the labourers migrate to the industrial areas during slack seasons, returning to their lands for harvest and sowing. Although the factory hand works in the city, his wife and children are left behind in the village. He occasionally sends them part of his earnings, and returns home on a visit at regular intervals. He seldom returns to his old post in the factory, going to a new mill on his return, or, at times, preferring to stay on his land. Thus factory labour is of a migratory character, hands are continually changing, resulting in a quick turnover of labour. "Men are trained, but leave before they give an economic return for their training. They have to be replaced by fresh unskilled workers. Output in consequence is considerably below the level it would otherwise reach. The workers also suffer, as they seldom attain sufficient skill to earn the highest wages." There is thus no special industrial class, no specialisation and low efficiency. The output is small and the labour is unskilled, and consequently low paid. Hence the poverty, ignorance, and illiteracy, combined with the low standard of living, accentuate the very causes, to remedy which the labourers had originally left their lands for factory life. There is one exception to this unsatisfactory turnover of labour, and that is in the carpet factories of the Province, where the workers have the advantage of hereditary skill. But they are not regulated, and the advantage is more than counterbalanced by the unhealthy conditions of employment, the long hours of work; and the insanitary conditions of their homes.

The labourers are ignorant and illiterate, satisfied with their lot because they are too poor to rise above it. Being agriculturists used to an independent easy life and work at will, they are clumsy in their new surroundings, and difficult to discipline or train to regular habits of work. They do not depend on wages exclusively for their support, so that having the alternative of falling back on their land at any time, they are not easy to train. They have no social training for keeping times and appointments, depending on the sun for a clock. They have to come from great distances, and it is not unusual to find them sitting outside the gate a long time before hand, preferring to be early rather than late. They cannot realise the value of time, and find it difficult to apply themselves to steady work. As was realised by Adam Smith even in Scotland, "The habit of sauntering and of indolent, careless application, which is naturally or rather necessarily acquired by every country workman who is obliged to change his work and his tools every half-hour, and to apply his hand in twenty different ways almost every day of his life; renders him almost always slothful and lazy, and incapable of any vigorous application even on the most pressing occasions. Independent therefore of his deficiency in point of dexterity, this cause alone must always reduce considerably the quantity of work which he is capable of performing." It is even more true in a warm climate, so that owing to this loitering and idling habit for short intervals during working hours, from 30 to 40 per cent extra hands have to be employed.

The workers are generally poor. Poverty is the result not of an unequal distribution of wealth, but of the fact that the productive power of the people, and the produce of the country, have not kept pace with the growth of the population. So that the wealth per head is small, and the income is at a bare subsistence level. Factory hands (usually agriculturists attracted by the high wages of industrial areas) are soon disillusioned, for the money
wages do not last any length. The 'dal' and 'roti' (lentils and bread) on his little farm were more satisfying than all the savoury dishes in the shops. The counter attractions in the town, like drink 'tadi' and gambling, run away with the money, leaving him little to send home.

The workers are a heterogeneous collection of every class, caste, nationality, and religion. A man from a high caste does not like to work in the same room as one from a low caste. The drinking taps must be separate for high and low, Hindu and Mohamadan. Mess room and sheds cannot be provided conveniently, for even the cooks would have to be of different castes. The languages are so different, that the manager and the staff can never hope to be able to come in personal touch with the employees. This makes a mediator, called the 'sirdar', an absolute necessity, to represent the employer and the employees to each other.

He is the real power in the mill, holding an invincible position, which gives rise to many abuses. Favouritism, and exaction of a toll for every consideration, tend to swell the pockets of the sirdars, impoverishing and frightening the poor labourers.

Many comparisons are instigated regarding the amount of work an Indian labourer can turn out as against a British worker, and it is often asserted that it takes two of the former to accomplish as much as one of the latter. As far as bare statistics and immediate output are concerned, the fact may be true, but many other things must be taken into consideration. Indian factories are not so well equipped with labour saving devices and up-to-date machinery as the British factories, so that it takes longer to do the same amount of work. Machinery is expensive in India, while labour is comparatively cheap, thus it is more economical to employ more labour than to invest in labour saving machinery. Then again, it is stated that the Indian labourer is lazy, for the moment he can earn the same wages for less work he stops working. But it is forgotten that the
long hours of work for a bare subsistence wage so exhaust his energies, that any opportunity of slackening is welcomed -- no man is to be blamed if he can earn the same wage for 9 hours as he did for 11, and he works only the 9, for even these are too long.

The daily attendance in the mills varies considerably during the year. Three quarters of the labour is fairly stationary throughout, while the other quarter returns to the fields during the harvesting seasons. This oscillation between factory and agriculture is a serious handicap to its efficiency, but is also a very effective check to the factory management taking too much of the upper hand. This continual change is also of great value from the health point of view under present conditions. Low wages, long hours of work, and the housing question, combined with the effect of the hot enervating climate, and the lax administration of factory regulations, make prolonged intense effort impossible, obliging the operative to take a rest and recuperate in his healthy village surroundings. This is of course merely patching up; recourse must be had to other more permanent remedies. A few suggestions are:

a. Creation of a wage earning industrial class by the provision of proper housing.

b. Creation of a social background by education -- general technical and industrial.

c. Provision of welfare work by means of specialised departments.

d. Improving working conditions, shortening hours of work, and better enforcement of the law.

e. Keeping careful records, and adaptation of work to suit the worker.

f. Organisation of labour.

g. Undertaking of industrial enterprises by native initiative.

There is no need to elaborate on each point in the present investigation, as it would mean plunging into conditions of general large scale industry, which are
beyond the scope of the thesis. These problems need to be studied in detail, severally and generally, before any valuable conclusions can be drawn.

With the growth of industrialism in the Province the demand for a steady supply of labour is bound to increase. Proper housing will induce the labourers to bring away their families and settle down in industrial areas. The provision of adequate welfare facilities will make living conditions happier for the workers and their families, and induce them to stay on near the factory. Educational facilities will enable them to become better and more efficient workers. Proper organisation of labour will help in maintaining a more efficient balance in the distribution of labour available for cottage and factory work, and thus diminish the evils of the great turnover of labour, which have been such a handicap to industry in the Province.