PRG. 60A(2) (N)/1000



CENSUS OF INDIA 1961
VOLUME XX—PART VII-A—No. 2

HIMACHAL PRADESH

Rural Craft Survey
THE ART OF WEAVING

Field Investigation and Draft
by
LAKSHMI CHAND SHARMA

Editor
RAM CHANDRA PAL SINGH
of the Indian Administrative Service
Superintendent of Census Operations
Himachal Pradesh, Simla-5.

1968

PRINTED IN INDIA BY THE CAMBRIDGE PRINTING WORKS, DELHI.
AND PUBLISHED BY THE MANAGER OF PUBLICATIONS, CIVIL LINES, DELHI.

Contents

		Pages
	FOREWORD	iii
	PREFACE	vii
1.	WOOL, WOOLLENS AND OTHER TEXTILES ...	1
	Clothings—Religious tinge and Superstitions—Woollens today.	
2.	THE SPINNERS AND WEAVERS ...	5
	Training of craftsmen—Training in silk rearing at Government Centre.	
3.	WEAVER'S WORKSHOP. ...	8
	Workshop—Tools and equipment (i) Tools for preparing the yarn. (ii) Tools for preparing warp. (iii) Loom and its parts. (iv) Other accessories	
4.	RAW MATERIALS	16
	Cotton—wool—sheep shearing—Silk—Facilities offered by the Government—Experimental Trials with mulberry varieties—Silk weaving—Pashmina—Sheli—Goat hair.	
5.	PREPARATION OF YARN	28
	Rearing and shearing—washing—teasing—spinning—Twisting of thread into two ply—Preparation of Pashmina yarn—Goat hair spinning—Count of yarn.	
6.	WEAVING PROCESSES	32
	Calculation in weaving—Preparation of warp—Removing the warp threads—Threading the Headles—Reeding—The tie-up operation—Preparation of weft—Weaving—Loom for Kharcha making—Sizing —Milling—Dying—Basic weaves—Plain weave—twill weave.	
7.	VARIETIES IN FABRICS	42
	Woollen fabrics—Traditional designs—Modern designs—Goat hair fabrics—Cotton fabrics.	
8.	ECONOMY OF WEAVERS	48
	Wages.	
	APPENDIX I	50
	APPENDIX II	61

"India is set on her own industrial collaboration and I have little doubt that she will progressively be an industrialised country, but I do hope that this process will not put an end to the handlooms of India. I have seldom seen anything more beautiful than the handloom fabrics which we have in our country—it is craftsmanship and the artistry of highest order and it keeps alive our great tradition of craftsmanship. I hope every effort will be made to protect these hand woven fabrics."

"JAWAHARLAL NEHRU"

The seed ye sow another reaps,
The wealth ye find, another keeps,
The robe ye weave, another wears,
The arms ye forge, another hears.

SHELLY

Foreword

ONE of the first steps to be taken in the first Five Year Plan was the establishment of six Boards for the promotion of handicrafts, village and small industries ; (1) The Khadi and Village Industries Board ; (2) The All-India Handicraft Board : (3) The All-India Handloom Board ; (4) The Central Silk Board ; (5) The Coir Board ; and (6) The Small Industries Board.

The rapid expansion of the activities of these Boards which concentrated not only on production and techniques, but also on organisation extension, credit marketing, and export, consolidation and enlarged the position that the household industries sector had so long enjoyed in the nation's economic life. It was this fact that forced itself upon the preparations for the 1961 Census and demanded that household industry should be separately investigated for a proper accounting of the nation's manpower, resources and its specific contribution to the national income. The 1961 Census therefore asked a special series of questions on household industry, input of family and hired labour, and the periods over which household industry is conducted. It was felt, however, that an enumeration of the total number of establishments and their industrial classification would be incomplete without a proper description of what they produce and how they produce. It was important to make an assessment of the limits of rigidity within which traditional skill operates. This could be obtained by studying the caste, occupational, social and economic stratifications, the limitations of credit and marketing facilities, the dominance of custom over contract, the persistence of traditional tools and design forms, the physical limitations of transport, communication and mobility, the inability to adopt new lines or adapt to changing circumstances. It was important also to make an assessment of the limits of flexibility that traditional skill is capable of because the transformation of traditional skills to modern skills is easier said than done and a thorough study may well reveal that it is perhaps cheaper from the social point of view to develop industrial skills from scratch than to try to graft traditional skill on alien soil. A rather tragic case of failure to make what would on the face of it seem a minor adjustment cast its heavy shadow on the nation when it was discovered that goldsmiths used to working on 22 carat gold all their lives felt sadly helpless when asked to work on 14 carat, so narrow and unadaptable were the limits of their skill and proficiency and so rudimentary the tools and equipment with which they and their forefathers had worked. This fiscal accident revealed that tools are even more important than skills.

An early opportunity was therefore taken in February 1960 to suggest to State Census Superintendents, that the Census provided a unique opportunity for coducting and documenting a survey of this kind. As such a survey was quite outside the usual terms of reference of Census work it was thought prudent cautiously to feel one's way with the thin end of the wedge of what would, it was hoped, prove to be an exciting pursuit. It was therefore considered the wiser course to wait until the State Census Officers felt so interested that they would no longer take the inquiry as an imposition but rather want to do it on their own and ask for the necessary staff and equipment. This office, too, in its turn, could make use of the internal to organise and elaborate the design of inquiry in order to feed the appetite that work in progress would serve to what. Because it was a labour of love, sought to be unobtrusively thrust on one's colleagues and because the inquiry itself was so vast that normally it would demand in any country as big a set-up, if separately established, as the Census Organisation itself and that over a much longer period, and because it was almost a pioneer venture, nothing like it having been undertaken since the 1880's it was decided to move towards a build-up by stages, to let the inquiry unfold itself only as fast as my colleagues chose to ask for more.

Thus, in the first circular of 18 February, 1960, it was suggesed that the inquiry might be conducted through the agency of the Development Deparment, the State Dirctor of Industries, the Director of Tribal Welfare, the Registrar of Co-operative Societies, and other organisations concerned with the promotion of household industry. A draft questionnaire containing 30 questions in three parts was reco mmended for canvassing. It was suggested that information on this questionnaire, village by village and area by area, might either be obtained through the regular departmontal channels of the State Government, or through the newly set up Census Organisation, or through the hierarchy of the newly-created Panchayats. Stress was laid on the need of photographic documentation and illustration of designs, shapes and forms not only by photographs but with the help of line-drawings or sketches together with a full description of the material used.

Almost the whole of 1960 and the first half of 1961 were spent in organising and taking the census count, although several States even during this period had not allowed the grass to grow under their feet but made exploratory studies and decided in their minds how the inquiry should be organised. A series of regional conferences held in Trivandrum, Darjeeling and Srinagar in May and June 1961 revealed much enthusiasm among State Superintendents to proceed with the survey, but the need of separate staff and equipment was felt at the same time as the realization dawned that this was much too serious an inquiry to be treated casually and left to be achieved through the usual administrative channels and State Census Superintendents proceeded to augment their staff with qualified research and investigating officers, technical persons, photographers, artists, draughtsmen and other trained personnel.

This was followed by rapid progress in co-ordination between the Central and State Census *offices in the matter of exchange and processing* of information, documentation and investigation, of assisting each other with trained investigators and in editing and finalizing drafts, layouts, presentations.

Mention has been made of questionnaire in three parts and thirty questions. The idea was to make a beginning with empirical, analytical studies on a structured questionnaire which would replace general descriptive accounts that had obtained so far. The primary aim was to obtain a picture as much of the artisan himself as of his craft, to obtain a perspective of the artisan and his craft in his social and economic setting, the extent to which tradition bound him and the winds of change ruffled him, the extent of his mobility and immobility, the conditions of markets, credit, new contacts and designs in which he operated the frame of new as well as traditional producer-customer relationships in which he still worked, and how far he was ready to pierce his own caste-tribe socio-economic cocoon and make a break through to new opportunities promised by the Five Year Plans. The aim was to hold up the mirror to hereditary skills struggling with the dialectics of tradion and change.

Thus the first part of the questionnaire, purporting to be a village schedule, sought to take account of the size and population of the village, its remoteness from or proximity to centres of trade and commerce, in short, the degree of isolation in which the artisan work, and relative strengths of various communities in the village which would afford clues to social interdependence and the prevalence of the *jajmani* system. The

second part was devoted to artisan communities in the village ; the several castes of artisans, the number of families in each, the total number of workers, males and females, the extent of co-operative activity among them, the extent of dependence upon employers and of wage or contract labour. There were questions on the raw materials used, the means of their procurement, the possible extent of dependence on others for raw materials, the extent of the material that artisans can handle within the limits of their skill. There were other questions on the exchange and flow of designs, the use of colours, the ancientness of the craft and legends associated, the colonization of the craftsman, on patrons and customers and on economic contact with the world in side and outside the village. There were specific questions on the workshop itself and particularly the tools and the source of supply of these tools, because it was felt that tools decide everything and are the surest index of intertness or flexibility. Separate blocks of questions were designed to bring out the ramifications of artisan castes throughout the country and the ways they sustained themselves the type of clientele they catered for, the extent to which they operated on money or barter or service, how specialized their craft was, how wide the market, how dependent they were on their socially preordained clientle and how restricted the latter was by the seemingly unalterable laws of social custom ; the extent to which they could operate in the open market, the range of their wares and the sizes to which these were ordinarily restricted either by the limits of their own skill or the length of their customers' pursestrings. Inquiries were to be made about the operation of middlemen and of cooperative societies, the people who gave new designs and demanded new products. Finally the several stages of production of the articles, themselves were to be fully described including the final and finishing stage and a list of very skilled craftsmen of each community was to be furnished. The third part was devoted specially to tribal communities and designed to find out how self-sufficient or dependent they were on the production and supply of manufactured goods, the extent to which they produced themselves or depended on others, their contacts with other communities and the specific forms of production and commerce through which these contacts were maintained.

Particular emphasis was laid on the need of obtaining as full an account as possible of unique regional design differentiations as they reflect not only the very culture patterns of the country but the persistent inventive faculties of the craftsmen. The importance was emphasised of giving full attention to articles of domestic use as it is in their shapes, design and forms that the culture patterns and traditional skills persist most tenaciously.

Simultaneously with the investigation of specific crafts, State Superintendent proceeded to compile a comprehensive list of all types of handicrafts obtaining in their State. As for the specific crafts to be investigated several tables were devised from the structured questionnaire is order to guide investigators toward pointed observation and analysis, to enable them to write, not just general descriptions, but with their eye on the object and on facts.

Investigations conducted between September 1961 and May 1962, including a study group of all States and the Social Studies Division in December 1961 at Delhi, stimulated many of the States into going in for a much enlarged schedule. The revised village schedule itself, the counterpart of the first part of the February 1960 schedule, contained 19 large sections containing elaborate and probing questions. The Family Schedule for practising artisan families similarly contained 19 main questions each subdivided into many questions. The Family Schedule for non-practising artisan families contained 21 questions. There were schedules for the study of cooperative societies of production-cum-training centres, and of consumer's proference. This enlarged schedule of investigation, in the formulation of which the States themselves actively assisted, was greatly welcomed. The surveys that will appear in this series will therefore consists of two main types (*a*) those based on the original short schedule and (*b*) those based on the much enlarged schedule. In some cases Census Superintendents felt enthused enough to scrap the work based on the original short schedule and do it over again on the enlarged schedule. In the meantime much experience was gained on the analysis of facts and figures to clothe each observation with plenty of authentic information so that the reader could make his judgment instead of being expected to see all the time through another pair of eyes.

This programme of survey of handicrafts and household industries has been fortified by several ancillary surveys, each one of which would deserve major attention. Along with the survey a compilation has been made of all handicraft centres in each State and inventory prepared of

skilled craftsmen. Photographic and other documentation has been built up to constitute what may now be regarded as the most considerable repository in the country. Elaborate and accurate maps of craft centres in taluks, tehsils and districts are either ready or under preparation. A full census of all fairs and festivals, weekly hats and markets, throughout India, has been taken and is being published for the first time. Andhra Pradesh has embarked upon a project of chronicling the social and religious antiquity and uniqueness of every fair and festival. A separate volume will be devoted to each district which promises to be of the utmost value to sociologists and orientalists. A full and complete inventory, replete with sketches and measurements of every object, has been prepared of exhibits in museums of tribal crafts in India. There has been a fairly satisfactory survey of houses and buildings, indigenous architectural designs and use of local building material of the whole country. All this has been entirely a labour of love, patiently organised and executed under great strain and in disregard of health and comfort, for which I take this opportunity of expressing my appreciation and grateful thanks to my colleagues.

NEW DELHI
July 30, 1964

ASOK MITRA
Registrar General, India

Preface

Just when the art of weaving originated is an uncertainty, but there seems to be a consensus of opinion among archaeologists in general that it was in existence earlier than the 24th century before Christ.

In an assignment of Superintendent of Census Operations there is an opportunity to carry out the studies in different spheres of scholarship. Over years it has become so worthwhile to learn about weaving and going to hundreds of weavers. Both Lakshmi Chand Sharma and I have been to many parts of the Pradesh visiting weavers seeing them at work and admiring their skill. We have come across rare artistic beautiful designs, colours and the finishing touches that make shawls, rugs, blankets or carpets so enchanting. Seeing the weavers sitting on their simple unsophisticated and crude looms and preparing gems in various designs and colours, is amazing. As one goes from one end of the Pradesh to the other there is a distinct variety. It has been a cause of silent pride for us to know something with the weavers (while carrying out our socio-economic survey) there. On return to Rampur, there was a group of men and women who were smiling at me and saying something in their local dialect which I did not understand. Someone very kindly translated their words 'there comes the Weaving Inspector'. They seemed to feel that I did know something about weaving after all. A very generous and warm compliment. It was more so because I have been often told by these craftsmen that they do not receive the attention that they deserve and that if some officials go to them they are always in a hurry to leave and they do not give sympathetic hearing to their problems. They do not try to get them out of the vicious circle, they do not give them the words of encouragements which would change the whole life of an individual. For us we had nothing to offer except that we very much appreciated their talents in producing the exquisite designs. This by-product of the Census of 1961 has been one of our most cherishable possession.

The study was undertaken due to versatility of Shri Asok Mitra, ICS, Registrar General, India who had the foresight to give guidance and encouragement to us in taking up such studies. We have written something on gold and silver ornaments, then this monograph is on weaving and we are also writing on some more crafts. It had not been possible for us to follow the questionnaire that had been prepared. We made vain attempts to collect this information through the Extension Officers Industries attached with the Blocks. The information supplied by them was disappointing with the result that Lakshmi Chand Sharma, myself and O.C. Handa, photographer and a good artist together had to go to many parts of the Pradesh. There are exquisite line drawings in colour prepared by O.C. Handa, Tuka Ram Wanikar and Kranti Kumar. I admire them for their patience, hard work, keenness and interest. We have added more photographs, line-drawings and write-ups. We were most keen to give a list of craftsmen so that those who refer to them could know who prepared these and where. Most things were not clear to us at times.

I would like to convey my most sincere gratitude to that remarkable Lady Mrs. Ruth Reeves for her utterly magnanimous words of encouragements that I received when we have hardly printed a monograph. She very kindly touched many of our photographs and advised us generally on matters concerning our monograph for crafts. Even when she was on her death bed apart from her love for India in abundance her love for Indian handicrafts were almost the last word on her lips.

Dr. Roy Burman and his devoted colleagues went through our material and made suggestions. We went on collecting material afresh. There were many who very generously let me look at designs and take photographs. And particularly I owe a gratitude to Raja Vir Bhadra Singh, MP and Rani Sahiba of Bushahr. They belong to a land famous for weaving. I would like to give a few lines in my preface from the very impressive lines by Mahatma Gandhi in his "The wheel of fortune" :—

"Slowly but surely the music of perhaps the most ancient machine of India is once more permeating

society. Pandit Malaviyaji has stated that he is not going to be satisfied until the Ranis and Maharanis of India spin yarn for the nation, and the Ranas and the Maharanas sit behind the hand-looms and weave cloth for the nation. They have the example of Aurangzeb who made his own caps. A greater emperor—Kabir —was himself a weaver and has immortalised the art in his poems. The queens of Europe, before Europe was caught in Satan's trap spun yarn and considered it a noble calling. The very words, spinster and wife, prove the ancient dignity of the art of spinning and weaving. When Adam delved and Eve span, who was then a gentleman, also reminds one of the same fact. Well may Panditji hope to persuade the Royalty of India to return to the ancient calling of this scared land of ours. Not on the clatter of arms depends the revival of her prosperity and true independence. It depends most largely upon re-introduction, on every home, of the music of the spinning wheel. It gives sweeter music and is more profitable than the excerable harmonium, concertina and the accordian."

How magnificent these words sound to-day.

Boswell, Simla-5,
November 2, 1966.

RAM CHANDRA PAL SINGH



Woollen dhoru showing chamang teko weaving design

1 *Wool, woollens and their textiles*

WEAVING may be said as one step forward in the archaic history of the civilized life. The early man felt an urge to cover his body and this he covered with the bark of trees and skins of animals. Later on men came to know the worth of the various fibres, which were made into rough and course cloth. Right from that early period of remote antiquity the art of weaving has paced forward with an unbroken continuity.

It is an established fact that among the arts of India, the art of making excellent fabrics is counted among the most ancient. The relics found at Harappa and Mohanjodaro excavations tell us clearly that spinning and weaving was common with the people living about 5,000 years ago. Rustam J. Mehta in his 'The Handicrafts and Industrial Arts of India' has rightly mentioned.

"*The products of the ancient weavers of India have been compared to 'exquisite poetry in colourful fabrics' and there was hardly a trick of the weavers art that was not known to them. It is now generally admitted that in the whole world, India was perhaps the first to perfect the art of weaving and that her gossamer-fine muslins and sumptuous brocades of gold are probably older than the Code of Manu*".

The use of clothing metaphors and certain terms of weaving as 'warp' and 'weft' have been used frequently in the epic of Rigveda. Usha, the goddess of dawn has been described as 'clothed in radiance'. One of the hymns of Rigveda personifies 'Day and Night spreading light and darkness over the extended earth like two famous female weavers weaving a garment. In another hymn we read, "Oh, I know not either warp or woof, I know not the web of thy weave", and again "May Dawn and Night do their work well for us; they who, turned towards each other, weave the out stretched warp."

There is a couplet in the ancient book 'Subhashita'—

बासः प्रधानं खलु योग्यतायाः ।
बासो बिहीनं विजहाति लक्ष्मी ॥
पीताम्बरं बीक्ष्यददौ तनूजां ।
दिगम्बरं बीक्ष्य बिषं समुद्रः ।

Which explains that '*clothes are the chief cause of respect and adoration. At the time of the churning, the Ocean gave his daughter unto Him that wore the yellow robe but poison to Him whose garment was the four quarters of the worl or who had no robe.*'

Kalidasa in his famous Kumar Sambhava has described the dress of a bride वधु दुकूलं कलहंस लक्षणम् । as "*the garment of silk adorned with a device of swans*". In another work Ritu Samhara he gives the description of the robes worn by the maidens in different seasons. An English version of the poem appeared in the "*Textiles and Ornaments of India*" by Pupul Jayakar reads as follows.

"SUMER—*In the hot breathless summer, maidens shed their lime green veils from masses of dark hair, from quivering shoulders.*

And now, they apply sandal paste to their breasts and cover them with transparent cloths, with jasmine, and snow white pearls.

At night, moon bright terraces are fragrant with the breath and lips of sleeping women.

THE RAINY SEASON—*In the season of rains, river surge to embrace the sea.*

And maidens loosen their hair and place yellow blossoms behind their ears.

Pearl necklaces cling to swelling breasts. Young girls wear garments of white about the hips.

The bride, perfumed with sandal paste and incense, hearing the roar of rain-laden clouds, shyly seeks her bridal chamber.

THE AUTUMN—*Autumn comes, and the skies are clear of rain and gentle breezes stir the moon lotus.*

Maidens decorate their hair, dark like a cloud of rain, with the jasmine flower, and place buds of the indigo lily behind their ears.

THE SEASON OF FROST—*The falling dew brings with it the season of frost.*

Fields are mellow and fruitful with grain and mouths are moist with flower-fragrant wine.

Women of fashion use perfumed powders and wrap their bodies in heavy silks, and in their hair is incense smoke. The young pouting maiden, mirror in hand, her eyes red with her wakeful night of love, makes up her lovely face, in the light of the morning sun.

THE WINTER—*When winter comes, robes lie heavy upon swelling hips and women hide their breasts in light bodies, for the time of fragrant sandal paste cooled by moonbeams has passed away.*

There are no jeweled belts, no chains, no anklets that vie with the song of birds, on feet that are as lilies.
And now women's bodies are golden with the fragrance of saffron and musk.

SPRING—*With spring the heart awakens to new rhythms and life quickens in the mango trees.*

The palasa flowers burst into bloom, fire-red like a parrot's beak.

Pearls linger on rounded breasts, trembling under the movement of perfumed breaths.

Hips are impatient of golden chains. Maidens wear silk garments dyed yellow or red with the juice of the Kusembha flowers, and on their breasts are tissues stained ochre brown.

In their garments are woven bright flamingoes.

In spring, the bodiless love-god enters the limbs of maidens.

In Himachal Pradesh perhaps we may not be able to trace out the early foot prints of this remarkable craft. But it is enough to console ourselves that the household industry is certainly of the very ancient origin. The Pradesh was rich in producing wool. Trade facilities with Tibet also helped in exporting wool and pashmina in abundance.

The following lines taken from 'Western Tibet and British Border Land' by Charles A. Sherring, will substantiate this fact.

"These grazing-grounds extend for untold miles to the east of the Mansarowar Lake and along the Sonpo, or Brahmaputra river, and also to the north of the Kailas mountains, and to a certain extent, with diminished fertility, to the west of the holy lakes ; but there is no question that Mansarowar is the spot round which the whole of the wool trade of Western Tibet centres. Whether the wool goes to Ladakh or Nepal, to Simla or to Kumaon, the whole practically comes from this part and the country to the east, and in every question relating to the further extension of this trade this principal fact must not be forgotten."

About the flourishing wool traders of this Pradesh Sven Hedin has written in the 'Trans-Himalaya' :—

"They come from Rampur and have bought wool in Gertse, which they will carry to Gartok and India on five hundred sheep which they have also obtained in Gertse. They have paid two rupees for each sheep. About sixteen Indian caravans in the year are said to fetch wool from Gertse, and no doubt their profits are large."

This profusion of wool made spinning and weaving an industry of many households. Not more than a decade ago every one of these hilly areas used woollen and 'Pasham' textures. All these were produced locally. Cotton cloth was uncommon. The industry flourished remarkably. About the delicate texture and intricate designs of the fabrics, it is said *"The Mughal Empress, Mumtaz Mahal, who is immortalised in the Taj at Agra, is credited with having discovered the art of wool*

weavers of the Himachal Area. It was in the early years of the seventeenth century that an expedition returning from the hills brought some shawls and blankets of delicate texture and intricate design for the queen. Although the people of the Himachal spun and wove much before that, royal patronage soon elevated their products to the same level as fine woollens from Kashmir and Turkistan".

History has failed to record who wove the shawls and blankets which pleased the queen so. But the fact that wool weaving in many parts of Himachal Districts was a very advanced industry, is inescapable.

Kabir who was a Julaha by caste was a famous poet of his time. He has woven a symbolical picture of life in the following metaphor.

"झीनी झीनी बीनी चदरिया"

"काहे का ताना काहे की भरनी, कौन तार से बीनी चदरीया
इंगला पिंगला ताना भरनी, पुषमन तार से बीनी चदरीया
आठ कमल दल चरखा डोले, पांच तत्त गुन बीनी चदरीया
साँई को सियत मास दस लागे, ठोक ठोक के बीनी चदरीया
सो चादर सुर नर मुनि ओढ़ी ओढ़ी के मैली कीनि चदरिया
दास कबीर जतन से ओढ़ी ज्यों कि त्यों धर दीनि चदरिया"

What forms the warp and what forms the weft, and what are the threads which form the web of life ?

'Ingla' and 'Pingla' are the warp and weft and 'Shushman' thread is used to weave the texture.

A spindle wheel with eight petals of lotus revolves, and the life sheet is textured with five basic elements.

God took ten months to weave the texture, and wove it in the best way he could.

The woven cloth was worn by saints and seers and they stained it with many a stain.

Kabir wore it in a best possible way and passed it over to the Master as it was given to him.

Clothings

People mostly use woollen cloth in the hills. In the lower hills people use cotton clothes. Their needs of woollen clothes are comparatively less. Silk is used but very meagrely.

Occasionally during marriages or festivals dresses differ. Villagers have a change in their dress according to seasons.

When villagers work in the fields, they are not particular about the clothes they wear. Quite a few of them wear old or patched clothes. But whenever there are fairs, festivals and marriages, every one comes out in his best clothes. In Kinnaur district persons who do not wear woollen garments on such occasions are looked down upon by the elderly people.

Religious tinge and Superstitions

Fabrics made of wool, pashmina and goat hair have a special significance. In old mythological books these fabrics have been shown as semi-sacred. Some of the Traditions and customs connected with these are given here :—

On the basis of the old traditions villagers have firm belief that wool is one of the four items created pure by the Brahma. The other three items are fire, Brahmin and *kusa* grass.

While carrying out *'Sharadh'* rituals of a deceased persons, a man is expected to wear woollen clothes. Woollen thread is placed over the *'pinda'* a round ball of rice flour, which is offercd to the dead.

In the past when there were ceremonial occasions among higher castes people were not allowed to enter in the community kitchen or to take meals in the party with cotton clothes on. Either they were supposed to wear only dhoti or some woollen garment at the time.

Prayer mats made of wool are preferred. According to *sastras* a disciple during his *brahamashcharya ashram* was supposed to wear woollens only and to put on a sacred thread of wool.

Amulets and charms worn by villagers are tied with woollen threads. If a woollen black thread possessing talisman, is tied to the legs, that is supposed to protect the wearer from burns locally called *chaven*. If a similar thread is worn on the upper arm it is supposed to keep off the effects of spirits and demons and evil spirits.

On the occasion of Shivratri an emblem of Shiva called *'gasain'* is suspended with a woollen thread by some of the households in their houses. Here again the idea behind the use of wool is its purity.

In case less butter is produced during the churning of milk, a charm is tied to the neck of the churning pot with a black woollen thread. It is believed that the wool is one of the components which can keep off the evil spirits.

Women who are bound to observe certain restriction during the menstruation period, keep away from the kitchen and the house for three or four days. During this period all the clothes used by them have to be washed. Only woollen clothes are considered pure and need not be washed. The sprinkling of *gangajal* is considered sufficient to sanctify them.

A similar treatment is given to the woollen garments worn by the mourners after the funeral rites are over.

Burning of wool is considered undesirable. If a small piece of wool is found on the way it is collected by the passer-by and immediately touched to the forehead and then kept in the pocket.

A covering of woollen shawl is given over the bride and bridegroom during the marriage. This is considered auspicious. At the same time it is believed that no evil eyes can hurt them.

At the time of the sacred thread ceremony the preceptor asks the disciple to wrap himself in woollen cloth and beg for the alms from those who are present on the occasion.

Even at the time of death among higher castes a coloured shawl or dosala is covered over the coffin.

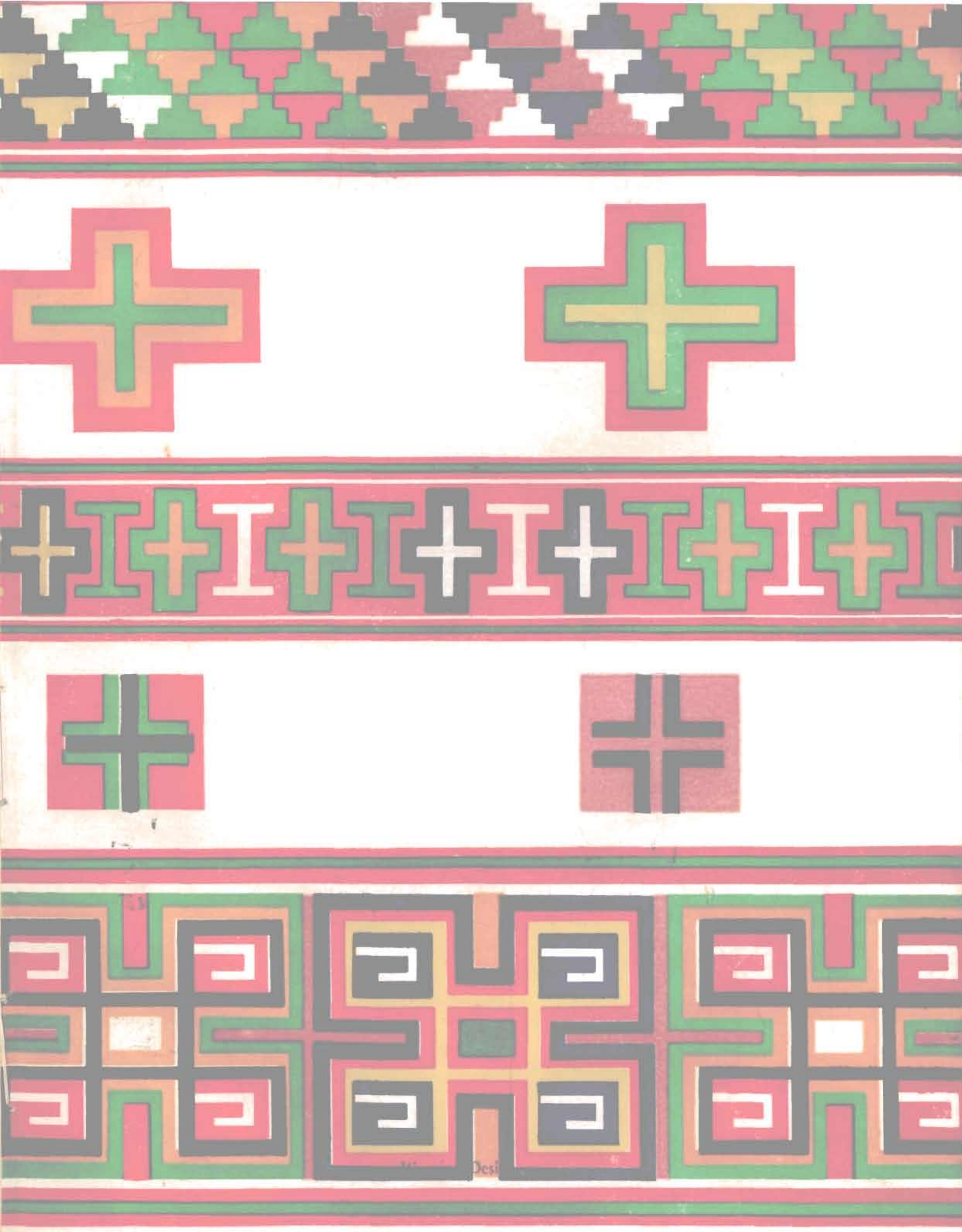
Woollens today

Here many rear sheep and produce wool. A small part of their domestic needs is thus met with locally.

The Pradesh had however a great set back after the trade with Tibet stopped. An acute shortage of wool and *Pasham* is being experienced for the last few years. Particularly *Pasham* is no more there. *Pasham* producing goats are available only in Tibet. Perhaps the climate of Himachal Pradesh does not suit them and therefore these are not reared here.

Throughout the Pradesh many women spin wool. Particularly people living in mountaineous terrain use woollen articles commonly. Many a families have few cotton clothes. They have woollen dresses, *pattus*, *pattis*, *kharchas*, *dohrus*, all made from different wools. Their traditional dresses are prepared from wool. Particularly on festive occasions woollen clothes are a must. A few who have developed a liking for cotton clothes are looked down upon by the elderly people. To meet so huge a demand every household spins. In all there are approximately 5,964 weavers working on handloom in the Pradesh, out of which 126 are cotton weavers. Customers provide them with the spun yarn which they artistically turn into a fabric.

Times are now changing. Economy of the poorer classes is taking a turn. Before them are the opportunities which bring them money. Many people are growing cash crops like potatoes, chillies and fruits. On the other hand, wool and woollen goods cost them more. New attractive designs in cotton clothes have influenced them. They are cheaper as well. All this has sufficiently brought about change in their tastes.



2 *Spinners and Weavers*

IN THE Pradesh atleast one person in every home spins. Spinning is very popular among men, women and children. They do it on a hand spindle known as *takli*. At a young age children start learning spinning and become expert spinners within a year or so. While basking in the sun or sitting beside the hearth the old spin with great enthusiasm.

There is a charming expression about spinning given by Jai Shankar Prasad in his famous work "Kamayani".

मैं बैठी गाती हू तकली के
प्रतिवर्तन में स्वर बिभोर—
चलरी तकली धीरे धीरे
प्रिय गये खेलन को अहेर।

While I sit spinning on a spindle
I sing in a sweet melodious voice
O spindle : keep on revolving steadily
My lover is away for a hunt.

Spinning is less common in the lower hills. One generally comes across old women spinning in these areas. They spin on a spinning wheel. If at all a male member of any household spins, he does it on the hand spindles.

A weaver is commonly known as a '*Julaha*'. Weaving is done by all the castes. The scheduled caste known as doomanas *Kolis*, *Julahas* and *Chamangs* are mainly occupied with weaving after doing a bit of farming or other jobs.

The weavers that we interviewed had no clear idea about the origin of their community. A few however, claim to be the descendents of the great poet Kabir who was a *Julaha*.

Apart from those who are professional weavers, there are some who weave for their own domestic requirements. Normally these are the Brahmins and Rajputs.

Training of craftsmen

The art of weaving generally passes from generation to generation i.e. from father to son. After about a year's training one becomes a good weaver. Sometimes weavers visit their friends or close relatives who are master weavers and gain further orientation.

There are a number of production-cum-training centres in all the districts where villagers are taught weaving. These are at :—

Bilaspur district

1. Common Facility-cum-Production Centre for cotton liveries and furnishing fabrics.
2. Hand Printing in Weaving Centre.

Chamba district

1. Weaving Training Centre : Chitrari
   Kakira
   Kilar
2. Weaving Demonstration Unit Tisa
3. Weaving Demonstration Centre Brahmaur.
4. Common facility-cum-Production Centre for blankets and tweeds, chamba.

Kinnaur district

1. Weaving Training Centre : Kilba
   Rarang.
2. Common facility-cum-Production Centre for blankets and tweeds, Nichar.
3. Common facility-cum-Production Centre, for carpets and Druggets, Sangla.
4. Common facility-cum-Production Centre for Gudmas and namdas, spillo.

Mahasu district

1. Weaving Training Centre, Rampur.
2. Weaving, Training Centre, Rohru.

Mandi district

1. Weaving Training Centre, Mandi.
2. Common facility-cum-Production Centre, for blankets and tweeds, Mandi
3. Weaving Demonstration Centre, Karsog.
4. Design Demonstration Centre, Mandi.
5. Common facility-cum-Production Centre for pashmina shawls, Sundarnagar.

In these Centres trainees during the training period of one year get stipend of Rs. 30 per month for the first four months. This stipend is reduced to Rs. 20 for the next four months. During this period the trainee also gets wages worked out on the basis of his daily out put. In the last four months the stipend is further reduced to Rs. 15 per month.

Training in silk weaving at Government Centre—This training is given at Mandi for one year. For the first four months, a trainee gets only a monthly stipend of Rs. 30 and for the next four months he gets a stipend of Rs. 20 p.m. plus wages calculated on the basis of his daily out-put. In the last four months he gets a reduced stipend of Rs. 15 p.m. plus wages. After completing the training, some of the trainees are appointed in different training centres, while others are encouraged to start their own business. Loans are also advanced. Some may receive looms also.

Besides the basic training facilities available locally, trainees are sent for advanced training to the All India Sericultural Training Institute, Mysore. About six stipends of Rs. 50 to 75 per month are awarded every year. Departmental staff is sent for short refresher courses to Jammu and Kashmir and other States.

This helps a great deal in improving the rural economy. On one hand they earn something and on the other they learn new techniques of the craft. Even in olden days spinning and weaving was a good source of employment for the people. There is a reference about this in Kautilya's Arthasastra :—

"याश्च अनिष्कासिन्यः प्रोषितविधवाः न्यङ्गाः कन्यका वा आत्मानं बिभृयुः ताः स्वदासीभिरनुसार्य सोपग्रहं कर्म कारयितव्याः ।

स्वयमागच्छन्तीनां वा सूत्रशालां प्रत्युषसि भाण्डवेतनविनिमयं कारयेत ।

सूत्रपरीक्षार्थमात्रः प्रदीपः । स्त्रिया मुखसन्दर्शनेऽन्यकार्यसंभाषायां वा पूर्वस्साहसदण्डः ।

वेतनकालातिपातने मध्यम;, अकृतकर्मवेतनप्रदाने च ।।

"Those women who do not stir out of their houses (anishkasinyah), those whose husbands are gone abroad, and those who are cripple or girls may, when obliged to work for subsistence, be provided with work (spinning out threads) in due courtesy through the medium of maid-servants (of the weaving establishment).

Those women who can present themselves at the weaving house shall at dawn be enabled to exchange their spinnings for wages (Bhandavetanavinimayam). Only so much light as is enough to examine the threads shall be kept. If the superintendent looks at the face of such women or talks about any other work, he shall be punished with the first amercement. Delay in paying the wages shall be punished with the middle-most amercement. Like wise when wages are paid for work that is not completed."

सूत्रह्रासे वेतनह्रासः द्रव्यसारात् । कृतकर्मप्रमाणकालवेतनफल-निष्पत्तिभिः कारूभिश्च कर्म कारयेत् ।

क्षौमदुकूलकिमितानराङ्कवकार्पाससूत्रवानकर्मान्तांश्च प्रयुजानो गन्धमाल्यदानैरन्यैश्च औपग्राहिकैराराधयेत ।

. Wages shall be cut short if, making allowances for the quality of raw material, the quantity of the threads spun out is found to fall short.

Weaving may also be done by those artisans who are qualified to turn out a given amount of work in a given time and for a fixed amount of wages.

The superintendent shall closely associate with the workmen.

Those who manufacture fibrous clothes, raiments, silk clothes woollen clothes, and cotton fabrics shall be rewarded by presentations, such as scents, garlands of flowers, or any other prizes of encouragement.

3 *Weaver's Workshop*

IT IS the skill and minute labour of the weaver that produces fine art work on old looms which are rough and crude in appearance. Many of these have a touch of what a loom would have been during Robinson Crusoe's age.

Workshop

Generally the weaver's workshop is housed inside the room or in the verandah of the ground floor. Where the ground floor of a house is used as a cow-shed, the loom may be set-up in a verandah or in a room of the upper storey.

When the weaver is at work one can see a well set-up loom with warp threads stretched on it. The loom consists of several units such as cloth beam, warp beam, batten fitted with reed, healds with heddle horses or pulleys and harnesses, cords and strings, lams and paddles. Then there are at least half a dozen shuttles, a dozen sticks, spools, bobbins, reed hooks and threading hooks, a scissors, an iron rod, spinning wheel and warping rack or peg board for preparing warp threads. Two or more bamboo baskets containing balls of woof threads which lie beside the weaver. Several balls of warp and weft yarn and lengths of cloth are hung on the walls and from the ceiling of the unsophisticated workshop. These belong to the rural customers whose orders are undertaken here.

The structure of the throw shuttle pit loom used by the villager is still the same as it was many centuries ago. The loom is stretched horizontally on the ground and is supported generally by four posts, fixed deep in the ground in a rectangular form. The posts may be six in some cases. These are about $1\frac{1}{2}$ feet above the ground. Beater and balance of heddles are attached to two or more wooden sticks suspended horizontally with a cord near the ceiling. Below the heddles there is one and a half feet deep pit in which four paddles are laid. The pit may be $1\frac{1}{2}$ feet wide and $2\frac{1}{4}$ feet long. The whole loom accessories are suspended from the ceiling and linked with strong thick cotton or woollen cords at various places to form the loom structure.

Throw shuttle pit looms are very common in rural areas where weaving is practised individually at home. In the production-cum-training centres run by the Government in the Pradesh, fly shuttle frame looms are being used.

Tools and equipment

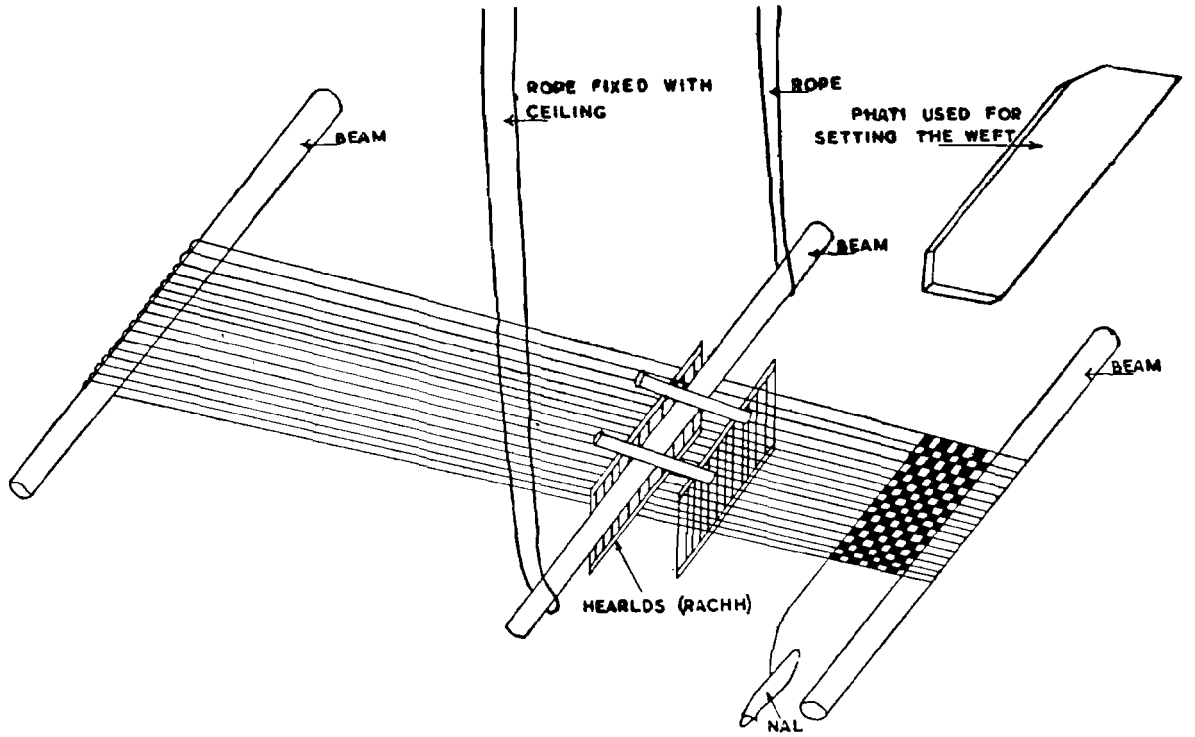
Tools and equipment used in weaving may be divided broadly in the following categories :—

Tools used for preparing the yarn ;
Tools used for preparing the warp ;
Looms and its parts ;
Other accessories.

A detailed description of all the equipments is given here :—



Local weaving designs:—(a) Kyumsa Yongrong (b) Yongrong (c) Yashin (d) Yaguma or Chholopanma



An old type of loom

(i) TOOLS FOR PREPARING THE YARN

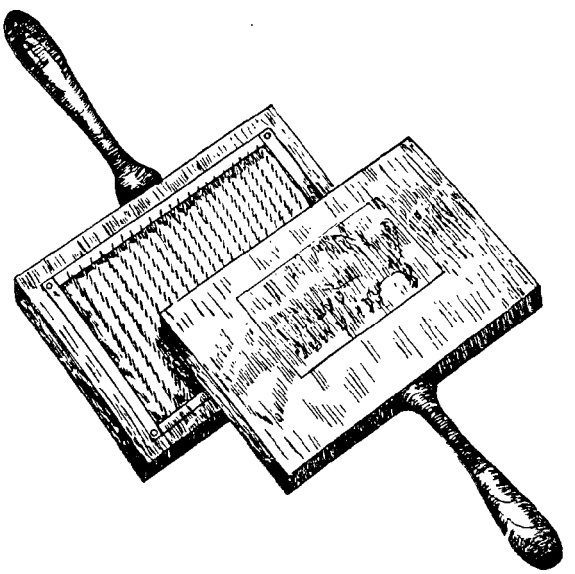
Carders—These consist of a pair of rectangular pieces of wood with handles. A piece of leather is nailed on the inner concave surfaces of these wooden pieces. The leather is studded with bent pieces of strong steel wire facing the handles. These are used for teasing wool. During the process irregular pieces of matted and balled up wool are separated and the fibres get straightened.

A pair costs roughly Rs. 5. In Kinnaur this is called *phalshat.*

Hand spindle—This consists of a 10 inches long piece of bamboo and a wooden whorl. The bamboo piece almost as thick as a lead pencil serves as a spindle and is thinner towards the upper end. The lower pointed end helps in its swift twisting. A circular disc called whorl is fixed about 2" above the lower end. This serves as a weight and helps in keeping the spindle rotating for long. This tool is used for spinning particularly in the higher regions of the Pradesh.

It costs about 25 paise each. In Kinnaur this is called *pang* or *pangach* and in other places *takli taokali.*

Wheel spindle—This has a wheel driven spindle on which spinning and bobbin winding is taken up.



Carders

A big wooden wheel of $1\frac{3}{4}$ feet diameter and of 4" to 6" thickness is hung tightly with an axle in between the two shafts. This is generally formed of

tow circular discs with a block in the middle through which the axle runs. These shafts fit in vertically on a 'T' shaped base and keep the wheel moving freely. The long wooden axle in the centre of the wheel has a handle. At the other narrow end of the base three small shafts are fixed vertically. The central shaft has a long wide hole which faces the centre of the circumference of the wheel. The two shafts on the sides have a round hole in the upper middle portion. Through these holes some 6" to 8" long hay-knitted thick long closed hook like pieces known as *charmakhas* are passed towards the wheel. An iron spindle of $1\frac{1}{4}$ feet long is passed through these *charmakhas* on the outer side and is kept parallel to the ground. A belt of strong cotton twine is tied over the circumference of the wheel and is passed through the hole of the central shaft and over the spindle. As soon as the wheel is put in motion, the belt over it makes the spindle twirl. The wheel is driven with the right hand and the wool is fed to the spindle with the left hand to spin and wind the thread into a cone on the spindle.

It costs between Rs. 10 and Rs. 25. Its common name is *charkha.*

Thernu—It is shaped like *takli* except that it is slightly bigger and has a creeping groove turning to the right at the top of the spindle. This groove serves as a notch and helps the rotating spindle to hang freely by the twisted thread. Instead of this creeping groove some *thernus* are just provided with a crochet hook. While using it the spinner can use the hands freely. Normally the tool is used for twisting the two ply spun yarn.

It costs about 25 paise each. *Thernu* is called *Kyumpang* or *Karu* in Kinnaur and costs about 25 paise.

Taknosha—This is like a small bowl. The hand spindle is rotated with convenience in it. It is either made of wood or clay. A metal bowl or a hollow piece of glass may be used for this.

(ii) Tools for preparing warp

Spool rack—This is a large wooden rack-shaped frame fitted with metal bars which can hold spools of warp threads upto a hundred at a time. By using this mechanical device several threads are warped at a time. Threads are guided from this machine over to the warping mill or warp roller. This is used only in Government Weaving Centres.

Warping drum—This is a wooden warping mill, consisting of a large skeleton reel set horizontally on a large wooden stand on which the central axle revolves. The circumference is about three or four yards. A number of smooth upright pegs are placed two inches apart on every horizontal shaft which forms the skeleton, reel. The machine is called sectional warp roller as the setting of pegs divides the whole reel into several sections. These loom accessories are used in Government Centres.

Warping board—This is a rectangular frame, made of four stout pieces of wood having holes on the upper surfaces in which wooden pegs usually one inch in diameter and 6 to 9 inches long are fitted.

Warping mill—It is a revolving loom accessory made of four vertical pieces of wood connected with a central rod which revolves on a pivot fixed in the centre of the base of wooden stand. Two adjustable cross pieces are fastened to the up-right shafts on which pegs are fitted. These pegs make crosses. The apparatus has been designed to make long warp and is used in Government Weaving Centres only.

(iii) Loom and its parts

Cloth beam or cloth roller—Is a long roller about four inches thick on which cloth is wound as it is woven. This may be a square beam. Normally the length of a roller is four feet but this varies according to the size of the loom. Both the ends of the roller are cut so that the ends fit in the cut provided in the two posts stuck deep in the ground a few feet apart. The weaver sits between these. At the right end of the roller two round holes are made which cross each other in the centre. When the holes are guided with an iron rod they serve as a ratchet wheel fitted in the fly shuttle looms. Through the hole a $1\frac{1}{2}$ feet long iron bar is passed which helps to stop the backward movement of the roller and holds the warp threads at the correct tension. At the same time this works as a rotater for winding the cloth. Some weavers do not use this iron bar. They insert the pointed portion of the right side post in the hole provided in the roller after loosening the tension of the warp. This is done with the help of a rope knotted to the other end of the warp and tied up close to the weaver. When more cloth is woven, the warp tension is loosened and the cloth is wound. Sometimes the villagers cut local wood and make this roller. Generally weavers get it made from the carpenters.

The cloth beam is called by different names. In Kinnaur this is called *ribin* or *musli*, in Rampur *torthi*, in Kihar *rallu*, in Brahmaur *belnu*, in Bilaspur *tareli* and in other areas this is known as *toor* or sley.

Batten or beater—This term is used for a wooden frame into which the reeds are fitted. The upper shaft of the frame is about 6" to 8" wide. Sometimes this has two or three curves. The width of the lower shaft is about 2½" while the thickness is about three fourth of an inch. (The frame carries the reed, adjusted in two grooves and the frame is then tied rather tightly at the two ends with a string). The whole apparatus is then suspended with two strings from a horizontal stick which is tied up near the ceiling. By doing this the batten hangs freely and is pushed backwards and forwards while weaving.

Weavers prepare this frame themselves or get it made by the village carpenters. Commonly this is called *hathri* or *hathu*. In Kinnaur this is called *thaksha*.

Reed— It is made of 6" to 8" long thin piece of smooth wood. Reeds made of steel wires are also used. These are available in the market having different number of dents per inch. The space between the two strips is called a dent. The number of dents or spaces per inch is termed as the size of the reed. These dents or spaces may be 5, 10, 12, 16 or 20 to an inch. The size of the reed depends on the type of work that is being done. The wooden reed is prepared locally by villagers who sell it to weavers and others. These may have 10 to 16 dents to an inch. Sometimes these are sold in local fairs. The price is about Rs. 2 to Rs. 4 depending on the size and length of the reed. Reeds having more dents per inch are used to produce material of a finer quality.

The reed is dented with warp yarn before fitting in the batten cap. This keeps the warp threads in position though the main purpose is to beat the weft yarn to the fill of the cloth.

Some species of bamboo known as *gar* are used for making the thin strips. The ends of these smooth-strips are tied with cotton thread to a long piece of wood called chaku and in this way the reed is also made.

In Kinnaur it is called *so* or *pee* while in other places it is known as *rachh* or *kanghi*.

Healds or heddles—Are composed of twine leashes. The tops and bottoms of the twines are tied to these. The composition of the healds used in the old throw shuttle pit loom is different from those used in the fly-shuttle looms

Healds for the fly shuttle loom are bought from the markets. The two upper and bottom bars carrying string leashes are fitted in a separate heddle frame. The frame has the upper side connected with the heddle horses and the lower with lams. The description of horses and lams has been given in the following pages. String leashes are composed of three loops of which one is tied up tightly to the top bar and the other to the bottom bar. The third small loop like an eye is made in the middle of the two loops. Through the middle loop warp threads are passed. These leashes are sometimes made out of wire.

Pit loom healds are generally made by the weaver. The string leashes are prepared by making two loops which cross each other in the middle. These are tied tightly to the top and bottom bars in a regular set of knots. While passing a warp thread through the healds each warp end is first passed through the lower loop and then through the upper loop. By doing this the threads are kept apart from each other and are well adjusted by the movements to form the shed for the weft thread.

A shaft or the bar which carries string leashes is generally made of bamboo to which a strong twine loops are knitted.

The number of healds used in a loom vary according to the weave and design that is to be woven. According to some weavers as many as 32 healds may be used at a time to make a cloth of a certain design. But mostly four healds are used every where in the villages. Two healds are used by those village weavers who make daree or similar druggets with a plain weave design.

Healds are called *jak* or *ja* in Kinnaur and *rue* in some other parts of the Pradesh. Heddle bars are called *shanathi*.

Heddle horses.—This name has been given to four or six simple pieces of bamboo or wood shaped in various designs from which heddle bars are suspended in a certain set order. In fly shuttle looms wooden or iron heddlehorses measuring about 10" to 12" each are tied to heddle frames. In pit looms these are about eight inches long. This is made of *nagal* or wood. The piece may be straight or in a chevron form. On each end a circular groove is made to tie a cord to it linking the heddle bars. A similar groove is made in the

centre of the heddle horses where another 8" long cord is tied linking two of them to a small piece of wood which is again tied up with a string to the horizontal bar near the ceiling. In some looms these two wooden pieces of heddle horses locally known *chiris* are attached to a device which consists of a small wooden wheel, with grooved rims fitted in it. In a weaver's term this is called pulleys. A cord tied up near the ends of the heddle horses runs freely over its groove by an arrangement to lift and to lower the sets of healds while weaving.

In Kinnaur heddle horses are called *pyadodenga* or *pyad*. In rest of the places the well known word is *chiri* or *charki* or *kutni*. About the action of these heddle horses an interesting couplet has been related by a skilled centenarian in Jehrwin near Seoni, who alas is no more as this material is ready for the Press.

चार चिड़ी चरवाखण लागी,
दो खड़ी दो नाचण लागी।
Char Chiri Charwakhan lagi
Do Khari do nachan lagi.

English translation :

There are four *chiris* in all, which work in pairs.

Lams—Below each heald long sticks hang parallel with cords from the heddle bars. By pressing the paddles these bars move upward and downward in regular turns and this way healds work. In fact healds, heddle horses, pully, lams and pedals are so inter-connected that as soon as the pedals are pressed the rest of them get into motion.

Lams are made of wood and rarely of bamboo. In Kinnaur these are called *tema* or *khyustog* and in other places *taraju*.

Pedals or treadles.—The term is used for the wooden levers worked by feet. Normally there are four of these which are used in pairs. Daree makers use only two pedals. To weave specific textures in fabrics six or eight pedals could be used. These are normally fitted from behind close to the bottom of the weavers pit. One end of the pedals is secured to a foot long wooden shaft which moves on a pivot. The other end is attached by cords to the lams—a rod tied to the healds below. Tying arrangements of pedals to lams depends upon the weaver's convenience and upon the design and texture of the cloth to be woven. The length of the pedals may be between 12" to 15". The common width is 3".

These are prepared by weavers or carpenters, and are called by different names such as temshing in Kinnur and *latai*, *panjari* or *pwaloo* in other places.

Warp beam—Like the cloth beam it is fitted horizontally on two pegs or posts at the back of the loom and is comparatively thinner. This handles and controls the tension of the warp threads. This wooden smooth roller is generally prepared by the carpenter at a negligible cost. In Kinnaur this is called *Thalsing* while in some of the other parts *agal* or *belnu* or *pandels*.

Central Beam—Some weavers have a central beam in their pit looms which keeps the warp threads slightly raised in the middle. Moreover it keeps the threads apart and in a correct order. The roller fits in on two posts driven into the ground almost in the middle of the front and back posts. Size of the roller roughly equals to the size of cloth or warp roller. This is called *kharaf*.

Temple—Is a name for a flat wooden shaft. A shaft with a sharp point on both ends is fixed invariably according to the width of the cloth. The sharp points are inserted into the selvedges of the cloth and this way helps in keeping the width of the cloth uniform. When about six inches of cloth is woven the shaft is released from its place and fixed up near the warp threads. Sometimes it is prepared by tying two ends of two crossing sticks which enables it to be fixed up to different widths of cloth. Cloth has a tendency to shrink during weaving and this is prevented by this device. Moreover this keeps the warp stretched to its full width in the reed and saves threads from breaking near the selvedges.

The shaft is commonly called *panak*, *daslethi*, *tunja* and *cherkha* in Kinnaur.

(iv) Other accessories

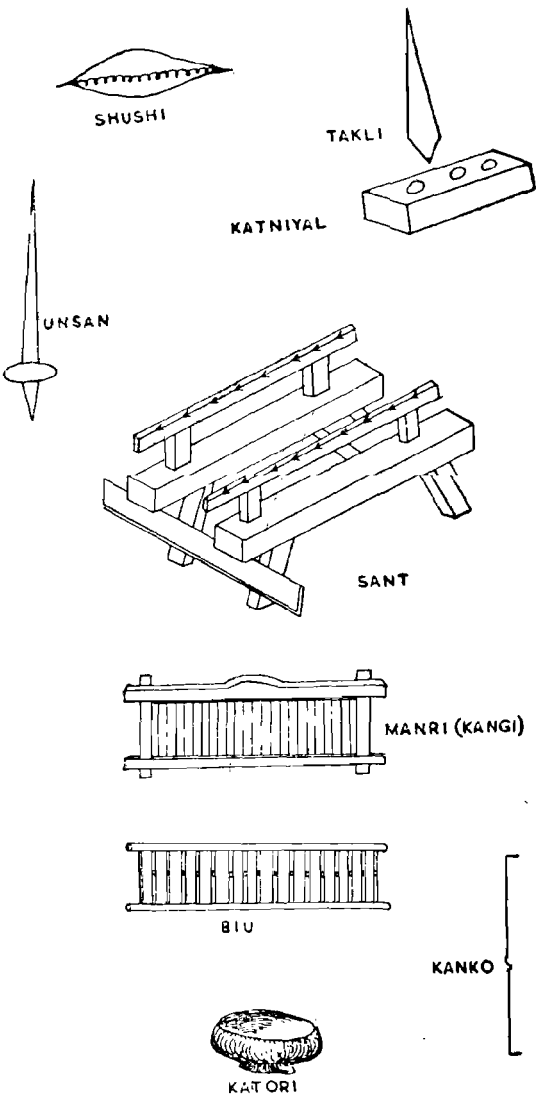
Shuttle—Is a small wooden structure made into two or three shapes. Used for passing the weft thread from left to right and vice versa through the shed made by the warp threads. Among the common shuttles used the one is shaped like a boat. The other one is like a simple round piece of hollowed out wood or bamboo. Shuttles are about 10" long. The boat shaped shuttle has a metallic spindle fitted into its cavity, on which a cylindrical bobbin carrying weft threads revolves. This costs about Rs. 2 to Rs. 3 each. These



Silver tea pot, cups and a shawl



Ornaments and exquisite shawl



Different parts of village loom and weaving tools

shuttles are made by carpenters. An oblong groove is made in the central part of the slat of wood and the two ends are shaped smooth and pointed, and are sometimes covered with small cones made of metal. A spindle is set up with a hinge in the required place. On one side of the shuttle two small eyelets are provided. The end of the weft thread wound over the bobbin is passed through one of the eyelets with fingers. Now the weaver takes the shuttle near his mouth as if to kiss it and draws the thread in between his lips by inhaling the air. Just for this reason probably, the shuttle is called as *kiss shuttle.* Shuttle is commonly called *sittal.* This shuttle is mainly used in fly shuttle looms.

Another type of shuttle is a hollowed round piece of wood or bamboo with one end smooth and pointed. A small eyelet is provided on the side near the opening. This is one of the oldest methods used for passing of weft threads through the warp. The hollow portion is filled up with the arranged coils of weft yarn. Then the end of the weft thread is passed through the small eyelet from inside and drawn out by lips or teeth. The weft is released in an event out flow, when the shuttle is thrown, from one side to the other through the warp. In Kinnaur this is called naíing. *Náću* or *naí* is a popular name and costs about Re. 1.

Sticks—About a dozen of thin sticks are used of different lengths. These may be used in warping and for weft yarn coils in the cylinder shaped shuttles. These may be about $\frac{1}{2}$ meter to 1 meter in length.

The sticks may be of about half an inch thick which are normally made from arundinaria falcata locally called nagal. The weft is wound on the sticks in a way that each time thread comes one above the other in several loops. These loops prevent the thread from getting entangled. When this weft yarn filled stick is emptied into the hollowed shuttle the weft yarn comes out in a regular out flow from the shuttle.

Warping sticks, which are similar in size and shape, are used for laying warp threads around the pegs or the peg board without moving from the sitting place.

In Kinnaur the stick is called phyushing and in other places *kanere or kathi.*

Bobbins—These are hollowed cylinders made of nagal or wood. The one, which is smaller in size is used in the boat shaped shuttles and the other a bit larger is used as a pirn for preparing warp threads round the warping sticks.

A smaller bobbin is about six inches in length. Weft yarn is wound around it and is then inserted into the spindle of the shuttle. The end of the thread is taken out of the eyelet provided on the



Shuttle

side of the shuttle so that the thread is released from the bobbin smoothly.



Bobbin

The large bobbins or pirn which may be called spools, are normally 8 inches long and are comparatively thicker in size. Warp threads are wound around these. Filled up pirns or spools are inserted into a long stick having metal spindles at one end. While laying warp around the pegs by alternating the winding track, thread releases smoothly from these pirus.



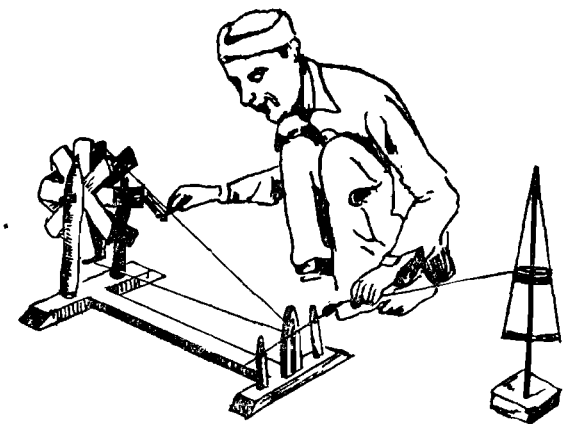
Spool

Bobbins are commonly called *nalu* or *nali* and those for laying the warp nare.

Bobbin winder—Is a hand driven implement having a spindle on which bobbins are inserted to wound thread over it. For village weavers spinning wheel serves as a bobbin winder. Bobbin is inserted into the spindle attached to the spinning wheel. As soon as the wheel moves the bobbin over the spindle revolves. The thread is released from hank stand called charki which feeds the bobbin.

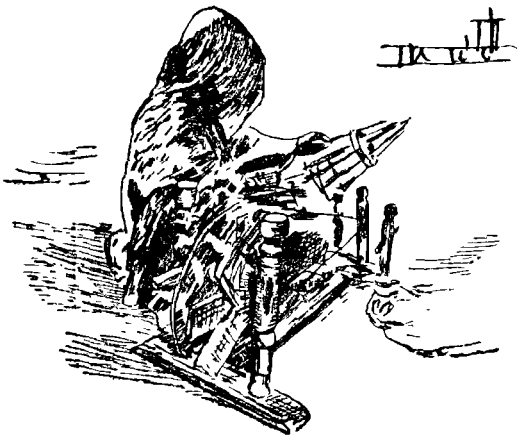
Spinning wheel costs between Rs. 10 to Rs. 25. It is commonly known *charkha.*

Charkhi or hank stand—Is an implement made of bamboo sticks which revolves freely on a pivot. The one used for woollen yarn is a conical four sided frame called *charkhi* or *charkhari* while for cotton yarn it is generally a six sided implement called *ura.* While filling up the bobbins the cage revolves on a pivot or on an axe and this way thread is released and fed to the bobbin.



Bobbin Winding

Cotton thread is generally available in hanks of fixed lengths. These hanks are placed on the hank stand and the thread is released and wound on the bobbins fitted on the wheel spindle. In case of woollen thread big balls are prepared by villagers. Winding of thread, on them is done in a set form. Once the thread is wound for about 150 times in one direction, winding stops. The direction is changed for the second wound. This is done in a way that the threads cross the first



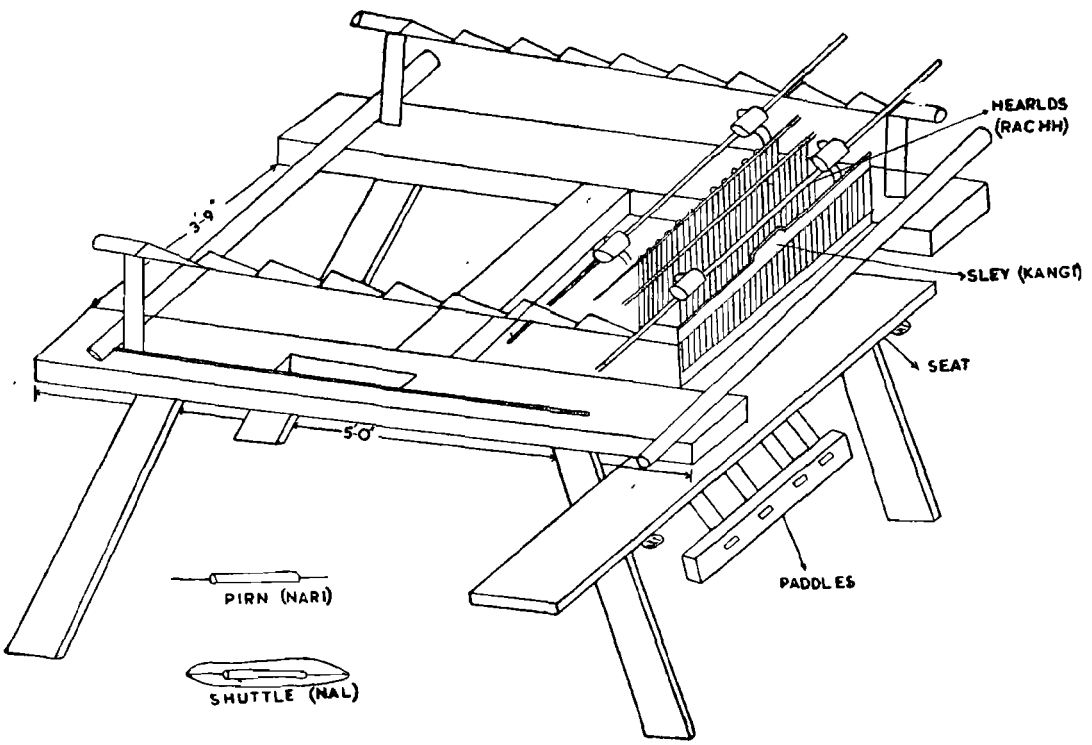
Spinning wheel and hank stand

wound at right angle. This way a bunch of 150 or more threads come one above the other. The circumference of each bunch or so called hank one above the other gets enlarged. At the time of filling up the bobbins the weaver removes each hank by breaking the thread from the ball and fits it on the charkhi. Balls carry hanks of varying lengths each one smaller than the outer one. Because of the conical structure of the charkhi hanks of varying lengths easily fit in on it.

Reed hook—This is about six inches long metal needle with a small hook at one end. The needle is thin enough to pass through the dents of the reed in order to draw warp ends from back to the front. Two or more reed hooks of different sizes may be kept. These cost about 0.50 paise each. The local name is *karosia* or *khuraki.*

Threading hook—This needle like hook is used for putting in warp ends through the eyelets of the healds. Weavers using the old healds of two loops do not use this. Instead they wind the warp ends in their right hand fingers and insert each one through the loops of the healds according to the design.

The threading hook is called *khurkhi* and costs about Re. 1.



Throw shuttle frame loom

4. *Raw Materials*

COTTON, wool, Pasham, goat hair, marino wool and silk are used in weaving.

Cotton

Most of cotton cloth in the Pradesh comes from the mills. Khadi cloth, *darris*, bed sheets and *khes* are prepared locally from cotton yarn.

Cotton Chemistry—The Encyclopaedia of Textiles, by the editors of American Fabrics Magazine gives an interested and valuable account of the cotton which is produced here :—

"Cotton is a vegetable-seed fibre. Botanically, the fibres are the protective covering of the seeds in the cotton plant *Gassypium*. This is a shrub which grows from four to six feet high.

Under the Microscope—Cotton fibre is a single cell. Seen under the microscope while growing it resembles a cylindrical tube with a central canal or lumen, a secondary wall, a primary wall and a thin outer film or cuticle. After it is picked, the fibre becomes flat and ribbon-like and is twisted throughout its length. The number of twists vary from 150 to 300 per inch depending on the type and quality of the fibre. The finest cotton (Sea Island) averages about 300 twists to the inch. The poorest grade (Indian) has about 150. These twists give cotton its excellent spinning qualities. They provide the friction needed to make the fibres cling together.

When mercerized (treated under tension with a 25 to 30% solution of caustic soda) the fibre swells and straightens out permanently ; becomes smooth, rodlike, and uniform in appearance, and develops a high luster.

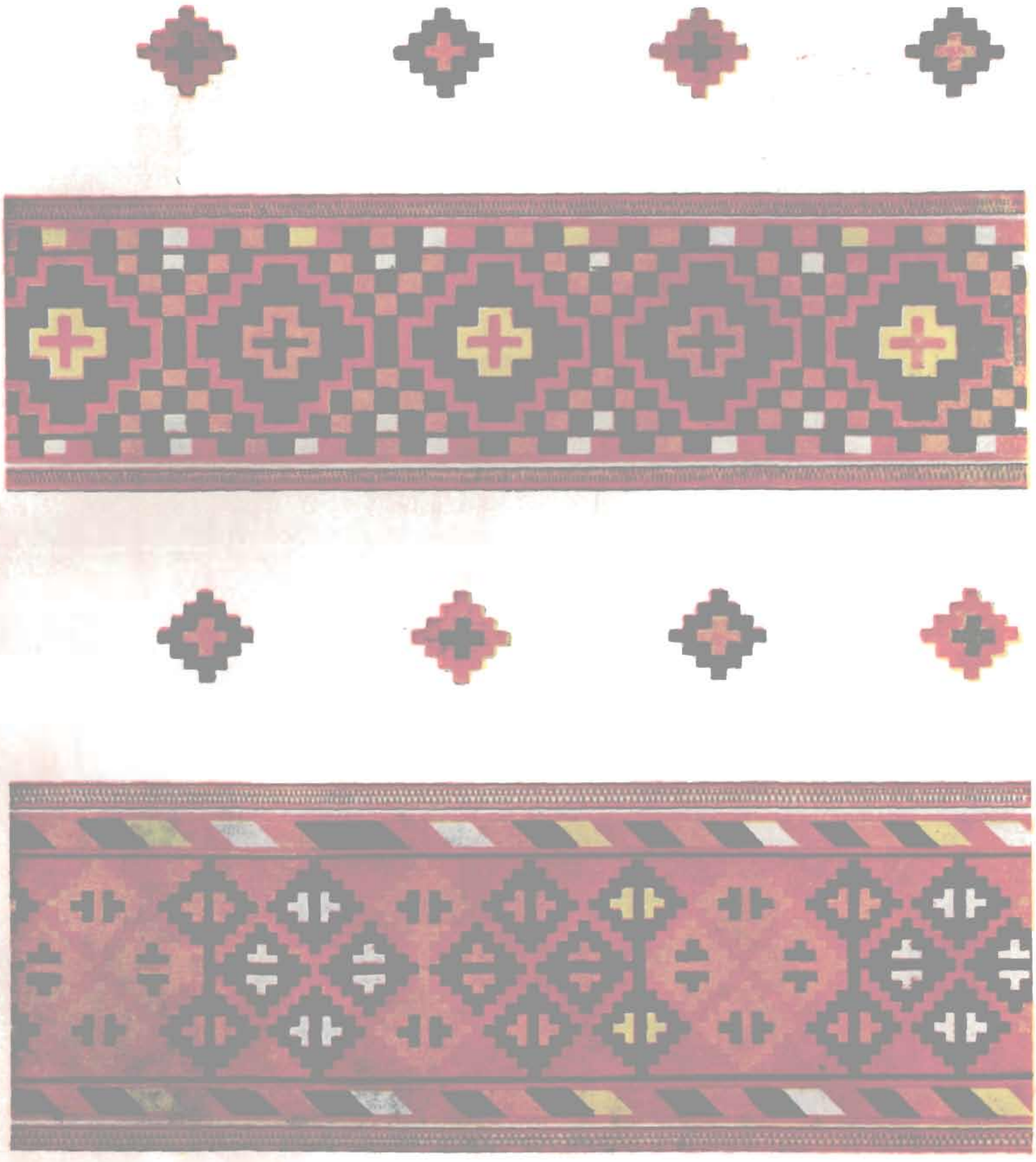
Chemical Properties—When dry, cotton fibre is almost entirely made up of cellulose—88 to 96%. After scouring, bleaching, and drying it is about 99% cellulose. Its formula reads $(C_6H_{10}O_5)$ n. In addition to cellulose it contains small amounts of protein, pectin, wax, ash, organic acids and pigment.

PHYSICAL CHARACTERISTICS

Strength—The tensile strength of the cotton fibre is greater when wet than when dry. It can withstand pressures from 30,000 to 60,000 pounds per square inch, depending on quality.

Absorbancy—It has remarkable capacities for absorbing moisture. When rid of impurities, the so called absorbent cotton will retain 24 to 27 times its own weight in water. Because of this, it can absorb and release perspiration quickly, has great affinity for dyestuffs, and bleaches excellently to a clear white.

Heat Action—It can be sterilized at boiling temperatures without disintegration. It withstands dry heat upto 248°F and can therefore be ironed at relatively high temperatures without damage.



A Showl Design

Washability—Because it is stronger wet than dry it stands up well under the rigors of repeated launderings. It also has good resistance to alkalies.

Durability—It stands up well in abrasion tests, and a fibre can be bent as many as 50,000 times without rupture.

History of Cotton—Cotton has been the companion of civilization for over fifty centuries. It has also been its king..... it has clothed nations ..... it has made slave of men... .... it has monopolized labour..... and has given rise to new industries. It has produced more economic paradoxes than any other natural product, for cotton has created cotton cloth and cotton linters serve as the base for acetate and rayon.

The first historical mention of cotton is found in the writings of the Greek historian Herodotus, who lived some 484 years before the Christian era. The father of history, returning from a trip to India, wrote, "*There are trees in which fleece grew surpassing that of sheep and from which the natives made cloth.*"

His fellow Greeks scoffed at the report, yet for many centuries the legend took hold that cotton bools were vegetable "lambs". Our forefathers believed that the mythical "lambs" reached down and grazed until the stalks grew too high. Then they starved and their bodies turned into "fleece".

Cotton has a Romantic History—In 1350 the English explorer, Sir John Mandeville, returned from a visit to India with a story that "*there grew a wonderful tree which bore tiny lambs on the ends of its branches. These branches were so pliable that they bent down to allow the lambs to feed when they are hungry*".

It was natural for cotton to become confused with wool in the minds of many. Even today, the German word for cotton is "baumwolle" which, literally translated, means tree-wool.

All ancient writings credit the Old World origin of cotton to India. Archaeological discoveries in the valley of the Indus in Sind date cotton at about 3000 B.C. or even earlier. Nearchus, admiral to Alexander the great, settled a colony of Macedonians on the Indus River. His reports speak of the chintz or flowered cotton fabrics which rival the sunlight and resist washing.

A few centuries later from Periplus on the Erythrean Sea comes the first trade account in which manifests of cotton goods are mentioned describing trading in the Red Sea, Arabia, the eastern coast of Africa, and the western coast of India."

"*Ancient Indian Method Used*—The earliest method of preparing cotton fibres for weaving was derived from the ancient Indian method.

The cotton fleece was hand picked and churga ginned, a process of cleaning the hairy, seeded South Atlantic cotton. The method was too gentle and too slow, and did not compete favourably with hand cleaning. (That's why cotton did not assume its kingship until Whitney's invention.) The cotton fibres were then spun into a thread. The Chinese had invented a foot treadle which replaced the ancient hand crank, and to this invention Leonardo da Vinci added the flyer (known to the colonies as the Saxony Wheel). This was the first successful application of continuous motion to the production of cotton yarn. It became the basic principle of the great English machines invented by Arkwright and others, which became the germ of the Industrial Revolution.

Next the raw stock was bowed. A workman struck a string of a bow with a mallet and the vibration opened knots, shook out dust and raised it to a down fleece. The home-made thread was then woven on hand looms in the house-hold.

Bowed Cotton from Georgia was a regular commodity in English markets in the 18th century."

Some of the weavers who live in Nahan, Paonta valley, Bilaspur and at few other places nearer the plains carry out in cotton weaving. Some of them who prepare darees purchase spun yarn from outside the Pradesh. Few others prepare khes from the yarn of *logar*. *Logar* is a local name given to the cotton used up in quilts and mattresses. This used up cotton is spun coarsely and sheets are woven out of the yarn called Khes.

Wool

Wool is the principal material for weaving in the Pradesh. Particularly upper regions of the Pradesh are rich in wool producing.

In Himachal Pradesh mostly two kinds of sheep are reared namely "gaddi" in Chamba and "Rampur Bushahri" in Mahasu and adjoining areas of Sirmur District. Almost all the sheep flocks reared by the villagers in the rural areas are of indigenous breed of sheep. It has been the

practice in the past and present too, the sheep breeders in rural areas do not lay stress on the breeding of pure white sheep flock and as such their sheep are mixed coloured sheep, having white black fawn and grey colours. In Chamba area the Gaddi wool is produced as Lamb wool and adult wool. The colours of these wool are mostly white, creamy white and black. Brown and grey colour fleeces are also observed. The cost of this wool in the market per kilogram is from Rs. 6 to 8. The indigenous wool is altogether coarse which can easily be called the carpet type wool. With the development programme many interested sheep breeders have taken advantage of sheep development programme by crossing their sheep with improved strains, with the result that both quality and quantity of wool has registered an improvement.

Sheep shearing

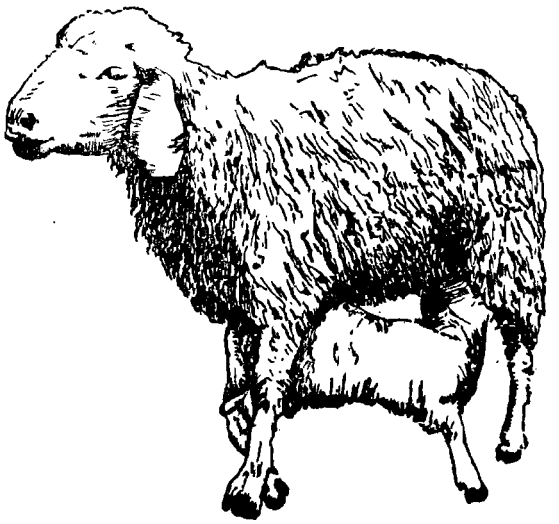
Considering the geographical and climatic conditions of India, Himachal Pradesh territory falls under the temperate Himalayan region when we divide the country into different sheep grazing tracts.

The sheep breeding occupation has been prevalent for the last many centuries. The sheep are mostly reared by Gaddis of Chamba district and Kinnaur district.

The total sheep in Himachal Pradesh according to the cattle census conducted by the Director of Land Records Himachal Pradesh is given in the following table. About 75 to 80% of those are reared in Chamba, Kinnaur and Mahasu districts. Most of the wool produced in the area is consumed locally.

District	*1951*	*1956*	*1961*
Bilaspur	12,349	22,436	22,128
Chamba	250,801	229,953	225,914
Kinnaur	...	...	42,422
Mahasu	185,062	233,568	156,868
Mandi	136,512	160,495	164,875
Sirmur	42,201	50,724	49,524
Total H.P.	626,925	697,176	661,731

The sheep are reared in this Pradesh in two ways. One method is to keep the sheep in the villages throughout the year. The number of this type of sheep is very low and the sheep are mostly small sized and constitutionally weak due to non-availability of enough grazing facilities.



Sheep and Lamb

The second method of rearing sheep is keeping of the migratory flocks. The flocks number 50 to 1,000. These flocks are migrated from the lower hills to summer abodes i.e. the alpine pastures upto the border close to Tibet in Kinnaur. During the winter the flocks migrate to foot-hills of Himachal Pradesh, Shiwalik and Jamuna valley.

The quality of wool as adjudged by the local people depends on the soft feel of the wool having long staples. These are found in natural colours of white, black, brown and grey. Normally there are three kinds of locally available wool namely *byangi*, *imboo* or *desar*.

Byangi—Is a long staple wool about 5" long and mainly comes from Kinnaur district. Shephards who keep flocks of sheep are nomads. They live with their sheep for half of the year during summer on higher altitudes ranging from 8,000 to 12,000 feet from sea level. As winter approaches they start coming down to lower altitudes. Their sheep also serve as beast of burden and called *ladoo*. Wool and bags of provision are carried by them. The wool yielded by them is called *byangi* with a price range between Rs. 9 and Rs. 12 per kilogram.

Imboo—Is the soft wool of the first shearing of lambs. Staple length of fibre varies from 2" to 4". Price varies between Rs. 9 and Rs. 11 per kilogram.

Desar—The wool produced from sheep which do not migrate is known as *desar*. This is some

what of a coarser quality. The price ranges between Rs. 6 and Rs. 9 per kilogram. This variety of wool is called by different names at different places. For example *rajori* or *palmi* in Tissa and *Shirlee* or *thootu* in Chamba.

Apart from the local yield of wool four sheep Breeding Farms have been set up in Jeori, Karchham, Taradevi and Chamba where foreign breeds have been kept for improving the variety of wool. Following varieties of wool are being produced there :—

Sheep Breeding Farm, Jeori

1. Rampur Bushahri ;
2. Rambonillet graded F1 and F2 ;
3. Polwarth ;
4. Polwarth halfbred ;
5. *Rambonillet ram wool ;*
6. Spanish Merino ;
7. Germanland Merino ; and
8. North Cancassian.

Sheep Breeding Farm, Karchham

1. Rampur Bushahri.

Sheep Breeding Farm, Taradevi

1. Russian Merino ;
2. Romney Marsh ; and
3. Spanish Merino.

Sheep Breeding Farm, Chamba

1. Spanish Merino ;
2. Germanland Merino ;
3. Polwarth graded F1 ;
4. Rambonillet graded F1 and F2 ; and
5. Gaddi wool.

The rates of various varieties of wool produced in these farms are given here :—

	Kind of wool	Price per kilogram Rs.
1.	Rampur Bushahri and Gaddi	8.00
2.	Indigenous lamb wool	9.50
3.	Scotch Black face	7.50
4.	Romney Marsh	9.00
5.	Polwarth	12.00
6.	Spanish Merino	12.00
7.	Rambonillet/Germanland/Merino/ Russian Merino	13.50
8.	Half-bred Rambonillet/Russian Merino/Spanish Merino/Germanland Merino and Polwarth	9.50
9.	3/4 Rambonillet/Russian Merino/ Spanish Merino/Germanland Merino and Polwarth	10.50
10.	Hissar dale wool (pure)	10.00
11.	Hissar dale wool (half-bred)	9.00

The improvement attained in wool at the Sheep Breeding Farm, Jeori, Mahasu District, as a result of cross-breeding between the Rampur Bushahri sheep (ewes) carrying coarse wool and imported sheep of the Merino strain producing fine wool can be mainly attributed to the change in quality and quantity of cross-bred sheep wool and the same is indicated below :—

Breed	Annual average quality of wool produced per sheep	Range of fibre fineness in microns
Rampur Bushahri sheep	1·00 to 1·5 kg.	30—60
Cross-bred F1 (half-bred) and F2 (3/4th) sheep	2·00 to 2·5 kg.	22—30
Rambonillet	4·00 to 4.5 kg.	15—20

The above figures show that considerable improvement has been achieved so far as the quality and quantity of the cross-bred sheep is concerned.

Average annual yield of wool from certain breeds at the Sheep Breeding Farm, Chamba is given below :—

Sl. No.	Breed	Average annual yield of wool per sheep
1.	Gaddi	735·64 gm.
2.	Polwarth half-bred (F1)	1,294·00 gm.
3.	Rambonillet graded F1	1,201·50 gm.
4.	Spanish Merino graded lamb (hogget)	602·36 gm.
5.	Rambonillet graded F2	4,370·00 gm.

The following chart will give an idea regarding the improvement of quality of the wool fibren F1, F2 grades sheep in comparison with Gaddi sheep.

Name of the breed	Kemp fibre %age	Hairy fibre %age	Hetro fibre %age	Ture fibre %age
Gaddi	2·21	7·65	27·90	62·24
Polwarth graded F1	...	0·75	23·68	75·57
Rambonillet graded F1	...	0·80	20·46	78·74
Spanish Merino graded F1	...	...	30·12	69·88
Rambonillet graded F2	...	...	1·20	98·80

The shearing of sheep flocks maintained at these farms are done twice a year i.e., during the months of September and April known as Autumn and Spring seasons. In some areas sheep owners shear their sheep thrice a year as below :—

(*i*) in the month of June and July ;

(*ii*) in the month of October and November ; and

(*iii*) in the month of February and March.

At the farms the sheep are shorn by the hand sheep shears and hand operated sheep shearing machines. It takes on the average about 20 minutes to shear one sheep. However, an expert local sheep breeder can shear the indigenous sheep within 15 to 20 minutes whereas for an imported big size sheep it will take 40 to 50 minutes.

It is an established fact that the wool on the shoulders is better in quality though the neck and middle areas also bear good quality wool.

The quantity of wool yielded by a mature sheep varies from breed to breed. One Rampur Bushahri ewe at maturity would yield about 1½ kgs. of wool annually. A cross-breed mature ewe at the farm would yield 2·5 kgs. of wool annually. As regards indigenous flock the average annual wool per sheep may be about 875 grams.

Today we find that a well grown up sheep may cost between Rs. 50 and Rs. 75, but some fifty years back these were priced for Rs. 5 or 6 only. Similarly their yield may bring the sheep owner Rs. 10 whereas in the past it might be only a few annas. In those days traders used to go from India to Tibet and bought wool at much cheaper rates. Their profits were large. Sven Hedin in his 'Trans Himalaya' writes :—

"*The sheep are sheared in the middle of August, and the wool is sold to dealers who come from Ladak and the Indian frontier. A large sheep yields half a rupee. At Tsomavan the wool is dearer, but there the purchaser is saved a large part of the cost of transport.*"

Washing of wool

The wool as it is removed from the body of the sheep, is collected in a bulk lot by the rural sheep owners and sold unwashed. However, prior to shearing the flock owners wash their sheep if they find the opportunity. But it is done by very few people. At the farm, the wool is also sold in a raw condition but the flocks are given a waterbath prior to shearing which removes some of the attached dirt and dust. The wool samples of different breeds so as to find out the clean yield percentages are scoured in the wool analysis at the farm on an experimental basis. The two chief scouring methods are (a) soap and alkali process and (b) solvent process. Only the soap and alkali process is used at the farms. The wool is passed through hot water (55-60 degree centigrade) in tubs which contain soap-soda solution at different concentrations and finally it is rinsed in warm water and dried up.

Wool Chemistry—We give below the fascinating study of wool fibre from the Encyclopaedia of Textiles by the Editors of American Fabrics Magazine—

"*Definition*—Wool to the fibre of a living animal. It forms the protective covering of the sheep, insulating it against both heat and cold and keeping its body temperature even.

Chemically wool is described as a protein called keratin. Keratin contains 18 of the known amino acids which are basic to living matter and is built up through a complex molecular structure known as a polypeptide chain. In general composition it is somewhat similar to human hair.

Chemical Properties—The chemical formula for wool reads —

$(C_{42}H_{157}O_{15}N_5S)n$

Its average composition is :—

Carbon	...	50%
Hydrogen	...	7%
Oxygen	...	22% to 25%
Nitrogen	...	16% to 17%
Sulphur	...	3% to 4%

UNDER THE MICROSCOPE

Wool is the living fibre. Under the Microscope, it shows three distinct parts :—

1. *Epidermis*—The out-side surface consists of a series of serrated scales which overlap each other much like the scales of a fish. Wool is the only fibre with such serrations ; these make it possible for the fibres to cling together and so produce felt. The serrations may run anywhere from 600 to 3,000 per inch. The higher the number, the choicer the quality of the fibre.

2. *Cortex*—A series of fibrous, spindle-shaped cells which form the centre of the fibre. They supply elasticity and strength.



Kinnauri silver ornaments, and a woollen dhoru showing Chamang teko a popular design

3. *Medulla*—The pith or core of the living fibre. This is the channel through which it receives nourishment.

PHYSICAL CHARACTERISTICS

Dimensions—From 1 to 14 inches or more in length. From 1/600th to 1/3,000th of an inch in diameter.

Strength—Can be bent 20,000 times without breaking. Extremely flexible.

Elasticity—Can be stretched to an additional 25 to 35% of its own length without breaking.

Resiliency—Natural elastic recovery causes it to return to original position after being stretched or creased. Is therefore wrinkle-resistant.

Crimp—Natural crimp or waviness of the fibre gives it bulk, enables it to trap air and so provide insulation.

Absorbency—Will absorb up to 30% of its weight in moisture without feeling damp. This explains its affinity for dyes. It also explains why wool feels warm. Perspiration is absorbed and so does not cool the body by evaporation.

Heat Action—Begins to disintegrate at 212°F.

CHARACTERISTICS OF WOOLLEN FABRICS

1. Woollen fabrics generally have a soft feel and fuzzy surface.
2. They have little shine, or sheen.
3. Woollens do not hold a crease well.
4. Their tensile strength is relatively low.
5. As a rule, woollens use less expensive yarns than worsteds.
6. Woollens take great depth of colour in dyeing.
7. Woollens are generally heavier and bulkier than worsteds.
8. Woollens are more suited to casual fashions.

"*What the Electron Microscope Shows*—More and more light is being thrown by science on the structure of molecules which go to make up natural proteins, such as those from which wool fibres are composed. We can picture a wool fibre as built up of a great number of chain molecules crimped like springs. When the fibre is put under tension, these chains are pulled out straight and extend to about twice their natural length.

These protein molecule chains are known to the chemist as polyeptide chains and their thickness is not over one 25 millionth of one inch. Every individual wool fibre is composed of a tremendous number of them arranged side by side ; they are not completely separate, being tied together by cross links resembling the rungs of a ladder, which are, in reality chemical bonds. The sides of the ladder are the crimped chains ; when the fibre is under tension the criped sides of the ladder straighten out.

When the extended fibre is released the cross links help to pull the fibre back into its original crimped form thus contribution to the elasticity shown by woollen materials. If, however, the fibre is held in extension for a long time, new cross links tend to form, which have the effect of settling the fabric in its extended state, thus delaying recovery.

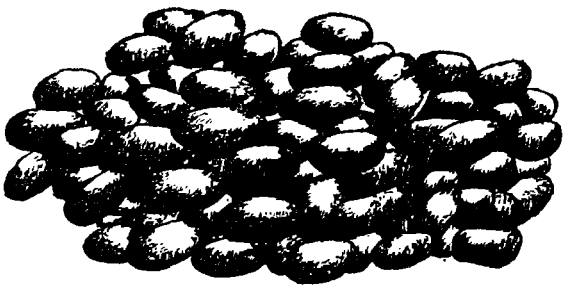
When a fibre is moist it has an improved recovery, since the water forms a molecular lubricant and enables the chains to resume their crimped shape rapidly. Dry fabrics have rather less rapid recovery. This is why fabrics wool are streamed when pressing and why, once dry, they retain their press more strongly.

This process of shortening or lengthening by means of molecular chain folding can be carried to exaggerated degrees under certain conditions ; a fibre of wool can be shortened to two-thirds of its normal length, if it is stretched and held extended in steam, for two minutes and released while still in the steam. The stretching and steam act together to break down the molecular cross links and allow the chains to take much more crimp than they can when linked. They thus become shorter than their original length".

Silk

The Encylopaedia Britannica gives following definition of silk—

"Silk is a fibrous substance produced by many insects, principally in the form of a cocoon or covering within which the creatures are enclosed and protected during the period of their principal transformation ; the webs and nets etc., formed by spiders are also of silk. But the fibres used for manufacturing purposes are exclusively produced by the mulberry silk-moth of China, Bombay mori, and a few other moths closely allied to that insect."



Cocoons

Silk is one of the principal materials used in weaving in India. But in Himachal Pradesh silk fibres are produced mostly in Government Silk Weaving Centres. The Industries Department, have established nurseries and mulberry farms at suitable places.

Silk should assume greater importance as a cottage industry. The climate in most of Himachal Pradesh is favourable for growing mulberry as well as rearing of silkworms. This would give additional income.

Appreciating the potentiality of the industry, the Himachal Pradesh Government set up, under the Department of Industries, a Sericulture Section in 1951 which confined its activities, to start with, to mulberry propagation and cocoon and raw silk production. Some strides were made in these spheres, as may be seen from Tables I to III (pp. 25-26), and the measure of success so far achieved as also the targets fixed for the Third Plan period, however modest, bids fair to make sericulture an interesting cottage industry of the Pradesh. To this end, therefore, endeavours are being made to popularise and develop silk.

Facilities offered by the Government.

Improved varieties of mulberry are supplied at a nominal price of 3 paise each by the following government nurseries :—

Mandi district	Dadoh	(Tehsil Sundarnagar)
	Mohi	(Tehsil Sarkaghat)
	Sandhole	(Tehsil Sarkaghat)
	Chauntra	(Tehsil Jogindarnagar)
	Mandi	(Tehsil Mandi)
Chamba district	Julakri	(Tehsil Chamba)
	Sicunta	(Tehsil Chowari)
Mahasu district	Kunihar	(Tehsil Arki)
	Dattnagar	(Tehsil Rampur)
Bilaspur district	Ghamarwin	(Tehsil Ghamarwin)
Sirmur district	Janot	(Tehsil Pachhad)
	Dhaulakuan	(Tehsil Paonta)
	Parduni	(Tehsil Paonta)
	Devinagar	(Tehsil Paonta)
	Puruwala	(Tehsil Paonta)

Distribution of silk seed—Disease-free silk seed supplied to the villagers is produced under controlled conditions for which regular 'Grainage' equipped with modern appliances like microscopes, refrigerators etc. and manned by technically qualified staff maintained by the department.

Hatching and free chawki rearing—Silkworm eggs are hatched and reared upto second moult (chawki rearing), departmentally, in the Chawki Rearing Huts established in the districts. This is done gratis—only a nominal price of Re. 1 per oz. being charged towards the cost of seeds.

Free supply of mulberry leaves.—Free mulberry leaves are supplied to the rearers from mulberry blocks established at the following places :—

Mandi district	Dadour, Palser, Takoli, Math, Barin, Dadoh, Tanwan, Sandhole, Mandi, Rewalsar Mohi, Baugalu, and Chauntra.
Sirmur district	Puruwala, Dhaulakuan, Parduni and Janot.
Mahasu district	Khodi (near Kunihar), Dattnagar.
Bilaspur district	Ghamarwin, Puni, Barthin.

During the Third Plan period, 50 such blocks are to be established. These Blocks being on government lands and under direct departmental control the rate of growth of plants and the consequent yield of leaves is very good. This scheme will enable expansion of silkworm rearing at the fast pace.

The Sericulture Organisation also arranges facilities for supply of leaves from the adjoining forests, P.W.D. road-side and Revenue Department lands.

Loan of rearing equipments—Rearing equipments, of which an adequate stock is maintained, are supplied on loan to needy rearers during the rearing season free of charge.

Disinfection of private rearing rooms—This also is done departmentally and free of charge.

Marketing of cocoons—Arrangements exist whereby the government purchase or market the cocoons with the rearers at prevailing market rates.

Reeling Centres—At present, there are three Reeling Training-cum-Demonstration Centres for consumption of the cocoons locally. These centres are located at Mandi, Dhaulakuan (Sirmur district) and Ghamarwin (Bilaspur district) where the intending persons from the rearers are imparted free training in silk reeling and the trainees

are given wages for work done during the training period.

Experimental Trial with Mulberry Varieties.

On the recommendations of the Tariff Commission, experiments have already been started for selection of varieties of Mulberry suitable for different zones out of the several varieties recommended by the Central Silk Board. Different varieties have been imported and planted in various blocks and an experimental nursery has also been set up to try these varieties.

Non-mulberry silkworm rearing—Experiments are being carried out with two races of non-mulberry silk fauna-Eri and *Tasar*.

Eri rears on leaves of costor plants which thrive in our climatic conditions. But as the return from Eri cocoons was not as much as from the mulberry cocoons, Eri rearing did not find favour with the local people. It has other draw-backs too. Yarn not being reelable, spinning with ordinary 'Charkha' makes it costly whereas the quality of the spun yarn is inferior to the reeled yarn.

Efforts are now being made to rear Tasar worms on oak leaves which abound in the Himachal forests. As the Kashmir Government is said to have successfully domesticated Tasar worms and as its silk finds ready export market, it is expected that the rearers will take to its rearing.

Crossbreeding seeds—Crossing and double-crossing of worms have been started with the object of increasing yields per oz. of seed so as to make the industry more lucrative.

Silk Weaving

Since June, 1962, the Sericulture Organisation has been entrusted with the organisation and development of silk weaving in the Pradesh. Prior to this, almost all the yarn produced in the Silk Reeling Centres was being exported to Varanasi or the Punjab as silk weaving was not being practised on any appreciable scale with the result that much gainful employment of the local people was being lost.

Complete weaving and twisting machines have been installed and weaving of silk has been started. A training centre in silk weaving has been organised and the trainees will be engaged on the completion of the training, on job basis. Steps are also being taken to get the silk sarees printed.

Salvage of basin refuse (Matka)—The basin refuse (matka), was being disposed of by the reeling centres at nominal prices. About 50 spinners get gainful employment into the bargain. The yarn is being used for weaving fine Karandi cloth, Shawls, *chaddars*.

Silk Chemistry

The chemical analysis of the silk fibre is given here which may interest the reader. This was very kindly sent to us by the Central Silk Board, Bombay.

Structure of Silk Fibre.—The main part of the cocoon filament is fibroin fibres which occupy about 75% of the filament, the remaining 25% being of sericin which covers the fibroin fibres. The sericin is not a simple one. But detailed observations show that there are several kind of sericins. The fibroin fibre is composed of fibrils which are microscopically visible though the nature of fibrils as structural units is rather obscure. The fibril consists of long fibroin molecules arranged in parallel way.

Examinations of the structure and arrangement of fibroin molecules by X-rays show that the fibril is made of crystalline and amorphous areas. In the former, fibroin molecules are arranged, regularly in a definite direction with a definite space between them in the same way as atoms arrange regularly in the crystal just like those atoms of the crystalline body of minerals. In the latter, fibroin molecules arrange irregularly with irregular space between them.

When the size of a cocoon filament is put at 2·8 deniers, a fibroin fibre is about 1 denier in size, and the cross section is 80 square microns. This size of fibril is not accurately known, but supposing it is micron in diameter, one fibroin fibre will contain 100 fibrils in the cross section. The number of molecules in the cross section of a fibril is estimated at 4×10^6 or 4 millions on the basis of researches by X-rays which reveal the area occupied by a molecule in the cross section. The number of molecules calculated from this estimation will be 4×10^8 in the cross section of a fibroin fibres of 1 denier, if it is wholly composed of the crystalline area. The length of a fibroin molecule is not exceeding 1 micron. Therefore, a fibroin fibre which as 1 denier in size and 1000 m. in length must contain such vast number of fibroin molecules as $4 \times 10^8 \times 10^9$, or 400 million a billion.

Thus, the silk fibre is a complex substance mainly composed of fibroin and sericin, containing

a small quantity of pigments which is mainly found in the sericin, waxes, sugars and inorganic substances which are found in both sericin and fibroin. All these substances constitute together many characteristics of silk fibre.

Characteristics of silk fibre—There are many kinds of fibres different from each other in various points but those used for clothing have some common characters. These common characters are :—

(*a*) The fibre is fine and long. That is, the width is less than 10 micron, and the length is more than 100 times of the width.

(*b*) The molecule forming a fibre is fine and long. The molecules in a fibre are arranged in order, and in some fibre they are arranged as if they are twisted. These conditions resemble a thread which is composed of orderly arranged, or twisted fibres.

(*c*) The fibre is suitable in tenacity, elongation, and elasticity.

These three points are the requirements from view points of the morphology of fibres, arrangement of molecules and use of fibres, respectively.

However, many differences are also noticed between different kinds of fibres. These are :

(*a*) Differences in the structure and length of each molecule in fibres.

(*b*) Differences in the arrangement of molecules in a fibre.

(*c*) Differences of the structure and form occurred during the formation of fibres.

(*d*) Differences of the secondary constituents other than the main components of a fibre.

Such structural elements as mentioned above are different according to the kinds of fibres, and it may be said that the characteristics peculiar to each fibre are determined in close relation with these minute factors in structure. We have many artificial fibres today in addition to natural fibres as clothing material. Different kinds of fibres, even if they resemble externally, have different structures, and their uses are determined by these structural peculiarities. Consumption of fibres is increasing year by year for various uses. But, there is no fibre which can be used for every purpose.

The silk fibre has such characteristics as follows in comparison with other fibres.

(*a*) The silk fibre is composed of proteins peculiar to it. Protein is a naturally existing highly polymerised substance.

(*b*) Cocoon filaments and raw silk consist of two different proteins, that is, fibroin and sericin. Such a dualistic structure cannot be seen in other fibres.

(*c*) The silk fibre has characteristic elasticity.

(*d*) The silk fibre is high in affinity to dyestuffs, so it can be dyed beautifully.

(*e*) The silk fibre is excellent in lustre and hardness which are important characteristics for clothing fibres.

(*f*) The silk fabric keeps warmth well, absorbs or releases moisture moderately. It is also easy for sewing, light in weight and not easily crumpled. These are all desirable characters for clothings.

The silk fibre can be used for fabrics and knittings, because it has excellent characteristics for the purpose. However, owing to recent development of artificial fibres, some of these, characteristics now can not be exclusive ones for the silk fibre. For instance, silk was the only long fibre formerly, but now we can make long fibres artificially. This is a remarkable fact which shows that competitors of silk have grown strong enough now. Furthermore, the yellowing, less resistance to rubbing, knots and lousiness are weak points of the silk fibre which should be improved to meet the demands of market. The main object of sericulture and filature is to produce silk for the use of clothing. And among many studies on the production and use of silk, improvements of silkworm varieties and of techniques of filatures, knitting and weaving are carried out to better every characteristic of silk, while modifications of the minute structure of silk by treatment with synthetic resins or chemical aim to improve the nature of silk physico-chemically."

Pashmina

Is a very soft fleece of a Himalayan goat. The animal is found in Tibet areas across the border, and in Lahaul and Spiti areas of Punjab. It is not reared up in the Pradesh because the climate of the region does not suit the animal. The raw pashmina carries coarse thick hair in about half its original quantity which is separated. Traders sell pashmina to the customers in the coarse form. Sorting of hair from the soft fleece is done by the consumers.



Common designs for Shawl

Rampur used to be the trading centre for pashmina and all other types of wool. Manufacturing of pashmina fabrics is said to be the main trait of the villagers there. There is a reference about it by Lieut. Thomas Hutton which appeared in Asiatic Journal Bengal Part II.

TABLE I

Progress of mulberry plantation (Sericulture Industry)

First Five Year Plan		Second Five Year Plan		Third Five Year Plan	
Year	No. of mulberry plants supplied	Year	No. of mulberry plants supplied	Year	Target of mulberry plants to supply
1	2	3	4	5	6
1951-52	10,073	1956-57	16,536	1961-62	30,000
1952-53	10,488	1957-58	28,332	1962-63	100,000
1953-54	18,225	1958-59	16,219	1963-64	120,000
1954-55	14,466	1959-60	22,049	1964-65	150,000
1955-56	15,801	1960-61	16,247	1965-66	200,000
Total	69,053		99,383		600,000

TABLE II

Progress of cocoon production in Himachal Pradesh (Sericulture Industry)

First Five Year Plan		Second Five Year Plan		Third Five Year Plan	
Year	Cocoon produced kg.	Year	Cocoon produced kg.	Year	Production target kg.
1	2	3	4	5	6
1951-52	3,125	1956-57	6,378	1961-62	9,500
1952-53	3,775	1957-58	6,758	1962-63	12,000
1953-54	4,175	1958-59	5,614	1963-64	15,000
1954-55	5,675	1959-60	5,777	1964-65	18,000
1955-56	6,250	1960-61	9,293	1965-66	20,500
Total	23,030		33,829		75,000

TABLE III

Production of raw silk in 1st and 2nd Five Year Plans and Targets for 3rd Plan (Sericulture Industry)

Production 1st Plan		Production 2nd Plan		Production 3rd Plan	
Year	Production kg.	Year	Production kg.	Year	Production targets kg.
1	2	3	4	5	6
1951-52	14,758	1956-57	74,330	1961-62	286
1952-53	93,546	1957-58	132,938	1962-63	414
1953-54	77,599	1958-59	138,188	1963-64	450
1954-55	11,433	1959-60	256,660	1964-65	500
1955-56	19,589	1960-61	9,603	1965-66	550
Total	288,925		681,712		2,200

"This place is therefore strictly speaking a manufacturing town, where those of its inhabitants who are not engaged in travelling with grain into Ludak and Chinese Tartary, are employed in the manufacture of pushmeena chuddurs, which are made from the under wool of the Tartar goats, called by the people 'pushm' whence the word 'pushmeena'. These chudders or shawls are sold according to their quality and texture from fourteen to twenty-five rupees each".

Pashmina in its pure form after it is separated from the wool gives a very soft feel. Mostly this is available in white and grey colours and rarely in black colours being extremely flexible, elastic and greezy. The cloth made from it is wrinkle-resistant. The Director, Animal Husbandry Department, Himachal Pradesh, has kindly sent us some of the chemical characteristics of pashmina which have been given here :—

Staple length	3·12 to 8·75 cms.
Average diameter in merinos	15·4
Sulphur Content	3·39%
Nitrogen Content	16·20%
Spinning Content	120·5%
Medullation percentage	Nil

Normally pashmina is used for making shawls of various sizes and sometimes for coatings. Shawls made of it are considered as objects of beauty and decoration. It has got double the warmth from that of the woollen shawls. People say that a person can pass a winter night in a Pashmina shawl.

These days the cost of raw pashmina is about Rs. 12 to 18 per kilogram. This depends on the quality of pashmina. If the quantity of thick hair is more than the soft hair or the hair are thin and short, the quality is considered inferior. To make a shawl of about $1\frac{1}{2} \times 3$ yards size about two kilograms of raw pashmina is needed. The net weight of the shawl produced from the raw material comes about 700 grams to 900 grams.

Sheli

The hair which are separated from raw pashmina are used for making mattresses locally called Kharcha or Shella. The hair which are coarsely spun into a yarn are known as *'pasham-ke-bal'* or *'sheli'*.

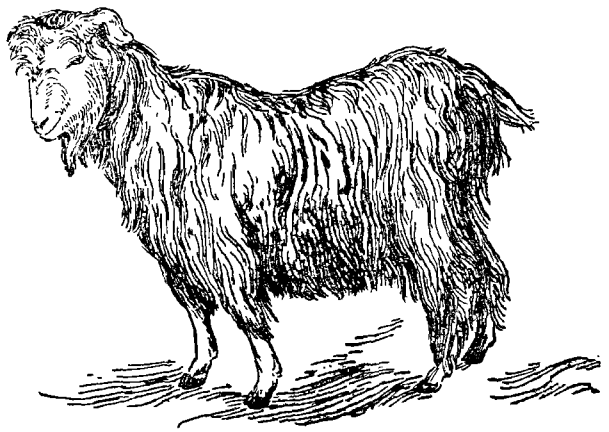
Goat hair

Villagers who rear goats shear them once in a year. The hair this way collected are spun coarsely and made into mattresses or *Kharechas*. The hair are called *'bakratha'* and somewhat resemble to *sheli*. Sometimes *'bakratha'* and *sheli*

both are mixed to form the texture. About five to ten kilograms of hair are needed to make a mattress. The hair are rough and coarse and can only be spun into a thick thread. Available colours are black and white.

The table given in the other column gives an idea about the number of goats during 1951, 1956 and 1961. The figures have been provided by the Director of Land Records, Himachal Pradesh.

District	*1951*	*1956*	*1961*
Bilaspur	17,340	40,590	32,036
Chamba	169,111	147,251	148,972
Kinnaur	...	...	18,853
Mahasu	146,823	181,010	119,137
Mandi	172,115	196,873	186,443
Sirmur	66,308	85,899	89,329
Total H.P.	571,697	651,623	594,770



Himalayan goat

5. *Preparation of Yarn*

NORMALLY the weaver in Himachal gets spun yarn from the customers. Two ply yarn is always used in weaving in the pradesh Half of the yarn is twisted and the rest half is left untwisted. The villagers do sorting, washing, teasing, carding, spinning and twisting before giving this to the weaver.

Farmers who rear sheep carry out shearing biannually. Shearing is normally done during March and September months. The sheep are invariably washed in the flowing water before shearing is done. For clipping fleece from sheep locally prepared scissors known as '*Katira* or *Kainchi*' are used. Before a shearing starts, the fore-legs and hind legs of the sheep are tied together. This is done so that the sheep may not move about. Sometimes another person from the household catches hold of the animals. Expert shearers do the shearing of a grown up sheep within half an hour. Those who get enough sheep keep the wool in a systematic way. For example lamb's wool which is soft and fine is kept separately. Wool of the older sheep is sorted separately according to the colour.

Washing

The newly gathered wool is greasy and holds bits of straw, thorns and burrs. To clean up the wool is first washed in soap nut water.

Teasing

After washing, the wool is dried. Then teasing is done. The irregular pieces of matted and balled-up wool are separated by pulling apart the fibres. The teased wool is then placed in layers to form a small sliver locally called 'phaha' weighing a few hundred milligrams. Now the fibres from the *phaha* can easily be used for spinning.

Another way to tease wool is to pull apart the fibres by fingers on a wooden comb. A small wooden comb is fitted to a wooden stand on which the process is taken up.

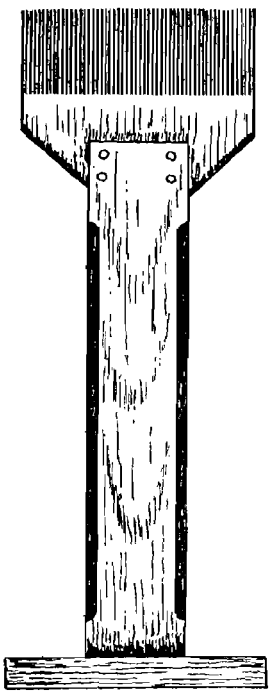
Sometimes teasing is taken up by using a pair of wooden hand carders. This process is called carding. The wool is spread on one card and the other is drawn across the first with a swift push. This is done several times till the wool becomes smooth without any lumps and fibres and filaments of wool get straightened. Now the cards are rubbed gently together and thus the carded fleece would come up over the steel wires. This wool is again arranged to form 'phaha'.

Spinning

Now the wool is ready for spinning. Spinning is a method which connects short pieces of fleece or fibres into a continuous yarn of an uniform thickness. During the process strands of fleece are strongly twisted and the spun yarn is wound to the spindle. This process is taken up generally on hand spindle called '*takli*' or *taokali*'. Another method is to spin on a spinning wheel or *charkha* which is prepared locally by the carpenters. Machine made foot operated spinning wheels are being used in production-cum-training centres set up by the Industries Department, Himachal Pradesh. Such wheels are also distributed to the villagers at subsidized rates under the community development schemes.



Kinnauri Carpet



Wooden comb.

The spinner sits on the ground while spinning. Well teased wool is held in between the first two fingers of the left hand in the form of small sliver called '*phaha*' or '*puni*'. In Kinnaur it is called *chankh*. To start with long thin wips or strands are pulled out of it with the fingers and secured to the top end of the spindle. The top end of the spindle is given regular twirling to the right with the thumb and a finger and is left to rotate within the round space formed by the thumb and the middle finger for every short while. In this way thumb and finger control the turning of the spindle and keep it almost at 80° to the ground. While the spindle rotates the fleece is continued to be pulled out of the '*phaha*' or sliver with the help of thumb and fourth finger of the left hand. Some spinners keep sliver in between the thumb and four fingers. While spinning it appears as if the fleece releases out of the sliver antomatically. It is just the skill of the spinner. The pulled out fleece continuously gets twisted with the rotating spindle. The process is taken up carefully. When the twisting thread becomes about a foot long it is carefully wound near the top end of the spindle. Now the thread is firmly wound to the spindle and can easily sustain the pull of the thread. As the top end of the spindle rotates the wool gets twisted in the form of cordage. The total length of the twisted thread is released from the spindle and wound around the thumb and last finger of the left hand in a way that the thread forms the figure-of-eight. The end of the thread is then secured carefully just to the lower middle portion of the spindle or near the whorl and the entire length of thread is wound there. After this winding of thread in the hand is not done. Again the same process continues. The spindle rotates, wool is fed and the spun yarn is wound to the spindle. This way the thread gets twisted clock-wise. After it forms a certain size, it is removed.

The wool spun by an expert spinner would always present an even thickness of the cordage. There will hardly be left any lumps of unspun wool. While spinning it appears as if the fleece is releasing automatically from the rolag to form uniform thread. The thread received by the initial twisting has a single direction twist and is called 'singles yarn'. The spun wool is wound on the spindle softly. Thus the single spun yarn comes out of the spindle in the shape of a long cone, slightly thick in the middle. It may be $2\frac{1}{2}$" thick and six inches long. This is called '*Kukroo*' or in *Kinnauri* dialect this is called as '*pohal*'. For an expert spinner it takes about two hours to a spindle full of yarn consuming 20 grams of wool.

In Kinnaur the upper end of the spindle is, somewhat different. Firstly it is not so much pointed and secondly it has three fourth of an inch long creeping groove turning to the right upto the top. This groove is like a notch so that the rotating spindle hangs freely in the air by the twisted thread. The spinner spins in a standing position. While using the spindle the spinner can utilize both of his hands freely. First he carefully twists a long enough piece of thread by hand and secures it firmly to the spindle near the whorl. Then he twists the spindle with both the palms by giving a swift push to the left. Now the spindle goes on rotating freely in the air. While it rotates the wisps or strands of the teased fleece gathered in the left hand are pulled out evenly by the right hand fingers. The thread received this way has a counter clockwise twist. When the thread becomes longer it is collected around the thumb and the small finger of left hand forming the figure of eight. The yarn is then released with the

right hand from the creeping groove and fed to the spindle to the right. This is a single ply yarn and is used for warp of a fabric. Weft yarn is prepared in the same way as in rest of the Pradesh.

Spinning on Charkha.—"Many textiles specialists today are of the opinion that the spinning wheel was intented in India as part of the cotton complex of that area of the world. The spinning wheels used today in India are practically the same as those used during ancient times, except that the wheels today are equipped with a hand knob on one spoke of the wheel".

These lines taken from "*The Textile Arts*" by Verla Birrell, indicate the popularity of spinning wheels from the very early times among the Indians.

In the low lying areas of the Pradesh, many homes have a spinning wheel. As soon as the wheel is put in motion, the belt over it makes the spindle twirl. The iron spindle used in the spinning is roughly $1\frac{1}{4}$ feet long. About one third of its portion is used to wind the spun yarn. The wheel is driven with the left hand in the same way as in case of common hand spindle. A whorl made from the bark of the dry gourd is fixed to the spindle. This keeps the wound threads in a certain set form.

Apart from using hand spindle and spinning wheel, spinning is taken up on *ambar charkha* or *rani charkha*. This consists of a small wooden wheel and a spindle connected with a cord. The whole structure fits in a small wooden case. The wheel is driven with the right hand and the wool is fed up to the spindle with the left.

Twisting of thread into two ply

The single ply yarn is converted into two ply yarn. Thread of two cone shaped *kukroos* are put together and wound round a soap nut. Winding of thread is done in a set form. Once the two ply thread is wound for about 150 times in one direction, it is wound in a way that the threads cross the first wounding at right angle. Winding is taken up till a ball of thread weighs about 150 grams or more. The ball is called by various names of *latora, daggu, retu* or *mandhoru* at different places.

Half of this yarn needed for a fabric is then retwisted counter-clockwise. The retwisting of a double ply thread is called *therna* or *kandena*. The process is called 'unsana' in Chamba District.

It is done on a hand spindle known as *'thernu'* or *'handernu'*. This type of spindle has a winding groove at its upper end. The spindle is given a strong twist with both the palms to the left and is left to rotate freely in the air. About a yard long thread is released from the ball which receives the twist. As soon as the thread receives the sufficient twist the thread is wound in the left hand in the form of figure 8. The spindle is held in the right hand and the twisted warp thread is fed to the spindle. The process is continued till the yarn is gathered in the form of cone about 5" to 6" long and $2\frac{1}{2}$" thick. It is slightly thick in the middle and tapering towards the upper end. The thread of these cones are accumulated in the form of ball called *latora, daggu, retu, mandhoru* or *batpoto* in Kinnaur. This is sent to the weaver alongwith the weft thread.

Retwisting of two-ply thread is done on a wheel spindle by tying of the cord between the wheel and the spindle into a figure-of-eight. This way the direction of the rotating spindle changes and the thread gets the counter clockwise twist.

Preparation of Pashmina Yarn

Pashmina fibre is the wool of a goat known as *chigu* goat or *chashmere* goat. The fibre coat of this animal consists of two parts—a long straight coarse hair and a short fine undercoat. It is the undercoat which makes the fine soft material. Traders sell pashmina to villagers in impure form.

Sorting—The soft fibre is separated. The sorter takes a small sliver of raw pashmina in his left hand and picks out thick hair one by one with his right hand. For sorting two kilograms it would take working 6 to 8 hours every day a month.

Teasing and spinning—This pure pashmina has greesy content which hinders in teasing and spinning. About 250 grams of whitish clay *gollu* or *makol* is mixed thoroughly in it. This makes teasing easier. Teasing is carried on by pulling apart the fibers with hand in the similar way as adopted for wool. The process may be carried on a wooden comb. Each piece of teased wool is made into small slivers which are easily handled for spinning. Spinning is taken up either on hand spindles, or wheel spindles exactly like the wool spinning. The only difference is of the quality of the yarn which is prepared fine and thin and the cones 'kukroos' which are made smaller in this case. All other processes of preparing weft and warp yarn and those required at the weaving stage are the same as described for wool.

Goat hair spinning

The goat hair are thick and coarse. These

have the least felting property. After being shorn from the goat the hair are washed in flowing water and are spread to dry. The hair which are separated from pashmina need not be washed.

Normally these hair do not have any lumps in them. If at all there are any lumps slight teasing is done with fingers, or by beating the hair with a stick for sometime.

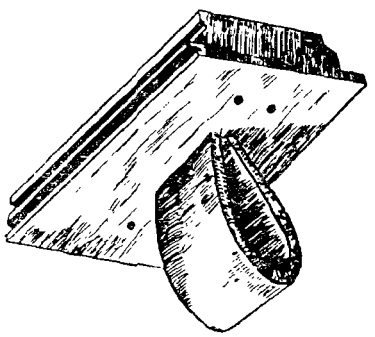
Spinning is carried on in the same way as for wool. However hand spindles needed in spinning are of a slightly larger size.

Count of yarn

In weaving terms fineness and coarseness of thread is indicated in numerical counts. The basic count given to a thread of maximum thickness used in weaving is of 4s count. It is obvious that the quantity of fiber consumed for making certain length of coarser thread would be greater than that consumed for making a finer thread of the same length. The thinner the thread the smaller the quantity of fiber used. The yarn in counts of 60s is the finest and extremely thin in appearance. At the same time spinning of fleece or fibre in finer or coarser yarn basically depends on the quality of wool fibres. The thread of the coarse wool will be thicker than that prepared from the fine wool. As the goat hair are extremely thick its thread would obviously be thickest whereas the fibre of pashmina being the finest one the thread spun from it would be as fine as of the 60s count.

Besides it is the skill of the experienced spinner who can spin the different qualities of wool finely. The pashmina fibre may be spun in yarn counts from 40s to 60s depending on the talented spinner. Similarly good quality wool is spun into the yarn ranging in counts between 20s and 40s and even in lower counts. Goat hair are spun into yarn ranging in counts from 4s. to 15s.

Villagers spin the fibre finely or coarsely according to their requirements. Fine wool yarn prepared by them for a blanket may be of 40s or 45s count. If the yarn is required for a heavy blanket the yarn may be of 30s or 35s count. For making a fine blanket of pashmina fibre the yarn count should range between 45s to 55s.



Picken

6. *Weaving Processes*

WEAVER's first job is to prepare warp and weft for the loom. For this the yarn passes through some processes. Setting of warp threads is altogether different from those of the weft threads.

Calculations in weaving

The weaver is often illiterate. Whatever estimates are used in the art of weaving is entirely based on years of experience. As soon as the yarn is received from the customer for the particular cloth the weaver manages to give the number of warp ends by giving a certain warp width. Extra threads for selvedges and for mending the broken warps are added. An extra length is kept which goes waste during the weaving and finishing processes. In making a woollen blanket weighing one kilogram, a loss of about 60 to 75 grams is unavoidable. As the weight of the piece increases the amount of waste slightly decreases in proportion.

Preparation of warp

The warping is an arrangement of long threads of equal lengths stretched over a loom kept parallel to the ground, this forms the structure or skeleton of the material to be woven, and makes the length of the cloth. A very important step prior to weaving is the preparation of the warp yarn for the loom and its installation on the loom. Weavers put in considerable labour in arranging the warp yarn. They think warping or *tana lagana* to be the most complicated process.

While warping threads artisan takes into account the length and width of the cloth, waste in weaving, and pattern or design of the weave. For instance if a weaver prepares a blanket measuring $3 \times 1\frac{1}{2}$ yards, there shall be 540 warp ends to be woven in No. 10 reed to make the width. Besides this there will be about 20 extra warp ends for mending the broken warp threads during weaving. To make blanket of three yards the weaver invariably keeps about 25 cm. extra length of the warp threads. Since it is not possible to weave to the very end of the warp it is necessary to allow an extra length in the warp threads beyond the actual size of the fabric. If two or more blankets of the same size are to be woven, warping may be carried out for all the pieces at a time. In that case extra length of threads is kept for every piece separately. Normally longer warps are not prepared by the weavers. They generally do not have orders for pieces of the same size and at the same time their age old loom is devoid of such equipment and facilities as may be necessary to have longer lengths of warp yarn. But in Government Training Centres fabrics as long as 25 meters are prepared.

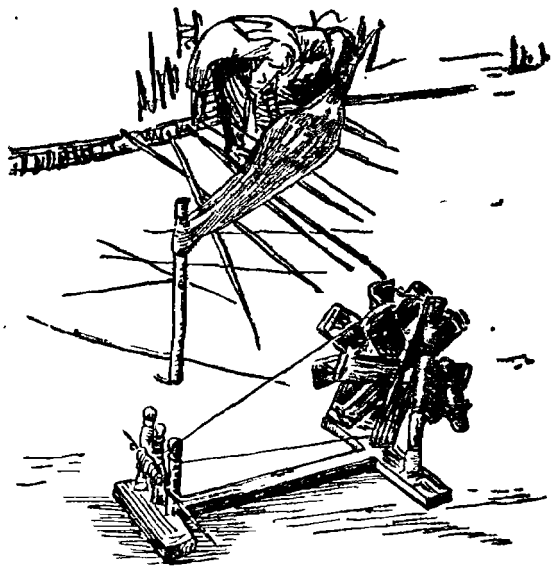
If some colour arrangement is required the warp threads of different colours are placed in a particular order. Black and white colours are the natural colours in wool. For making a blanket in check design black and white yarn threads are arranged in alternate sections.

Weavers prepare warp either by peg board warping process or stick warping method.

Carpet Design



Kinnaur Cap & Shawl

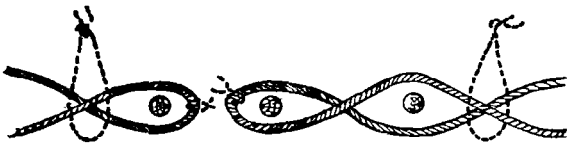


Tana bana

Peg board Warping.—For peg board warping a small rectangular wooden warping frame is required. This is bored with holes at equal distances, in which a dozen or more smooth pegs .6 inches to 9 inches long and one inch in diameter are fitted. The pegs are movable and can be spaced to achieve the required length of the warp. Usually 10 yards of warp lengths can be made on it. Threads are stretched around the pegs according to the length of the cloth. If shorter length of warp is required some pegs are removed.

The peg board warping is undertaken either by transferring the yarn from the stick cage or by guiding the thread from a thread ball held in the left hand. The end of the thread is first secured to the first peg on the frame and then guided round the pegs with the right hand. Some times a piece of stick having a small metal hook at one end is used for the purpose. The thread is guided round the pegs through the hook of the stick. The thread is made to cross in between the last two pegs and while retracing the thread the direction is reversed. Each time the cross formed this way keeps each warp end separately and forms the lease. This continues till the number of required warp ends is obtained. One complete circle of the thread makes two warp ends.

The weavers who do not keep warping frame carry out warping on similar pegs usually six inches high by pitching them into the ground. Particularly when warp of shorter lengths is

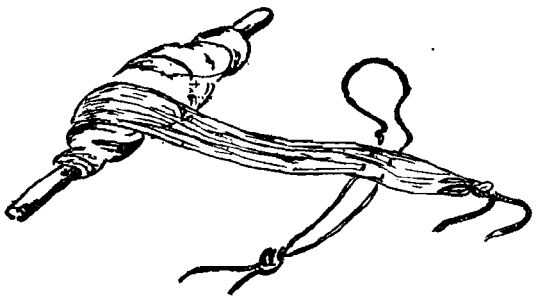


Peg warping

required warping may be done on the smooth levelled ground. For this three or more pegs may be sufficient. At first two pegs are pitched into the ground at the distance which may form the length of the cloth. The third peg is pitched about six inches apart from either of the peg in a way that all the three peg are in a straight line. The two pegs which are close to each other help to make crosses in the warp threads. If a fourth peg is necessary it is pitched nearer the peg on the other end. It is useful particularly in longer warps where more than one cross is very helpful in keeping the threads separate. Guiding of thread is done in the same way as on the warping frame. The weaver holding the ball of warp yarn in the left hand secures one end of the thread to the first peg and walks along the length of the pegs pitched at the other end. Here the thread is crossed in between the two pegs and while retracing his steps the direction of the cross is reversed and thread is brought back to the starting post. This way two warp ends are obtained. The process is continued till the required number of warp ends are received round the pegs.

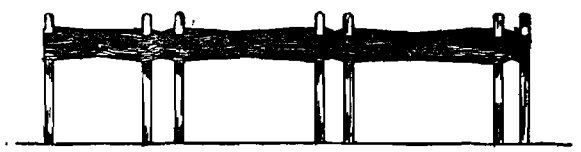
Weaver goes on counting the number of warp threads secured round the pegs. In case the bunch of accumulating warp threads gets thick, he removes them from the pegs. Before the threads are removed all the crosses are properly secured by tying with a cotton string or twine. Loops both at the beginning and the end of the warp are also tied with a string. Sometimes a foot long piece of wood is inserted in the loop and then tied with a string so that the arrangement of threads is kept in correct order. Some weavers tie a coloured thread loosely around groups of 40, 60 or 80 warps.

The cross making is an important part in warping. Without making them warp threads cannot be stretched on the loom. One or more crosses made in warping process help in a number of ways. For instance they keep the thread from tangling, make them easy to count, maintain the order relative to each other in which they are wound and in which they will be mounted on the loom and establish a shed at one end of the warp. Some weavers use one cross and others make two as a precaution against losing any one of them.

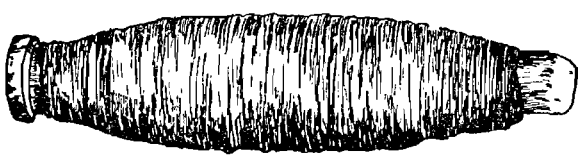


Warp threads wound round the stick

Stick warping—Another method used for warping is carried on by fixing light bamboo sticks, about two feet in length, into the ground. Two sticks are fixed firmly one at each end in the ground which makes the length of the cloth. In between these two sticks as many pairs of sticks as may be required are normally pitched at about five feet distance in a way that the sticks may form parallel rows with five inches of space. These sticks take the place of pegs. The warp threads are guided through these stick posts from the warp filled pirns. The pirns revolve on the metal wire fitted on two sticks. After tying the threads of each pirn to the warping stick at one end, the warper holds sticks with warp pirns one in each hand and walks upto the other end of the warping posts. While walking along to the opposite extremity and retracing his steps to the starting point the warper goes on intervening the thread between the sticks. This way two warp ends are wound in about half the time taken in peg warping and weaver's labour is saved. One complete circle of thread makes four warp ends. This method is helpful in preparing longer warps. But village weavers adopt this method for preparing warps of shorter length as it saves their time and labour.



Stick wasping



Filled-in-bobin

In Government Weaving Centres different warping methods are used. The most common method used here is the sectional mill drum warping using a horizontal drum back stand and hook reel. The drum or the warping mill is rotated by hand and warp threads are wound on it. The threads are released from bims arranged in the hook reel. This way several threads are received for the warp in a single circle. These several yarns form a section of the warp.



Filled-in-spool

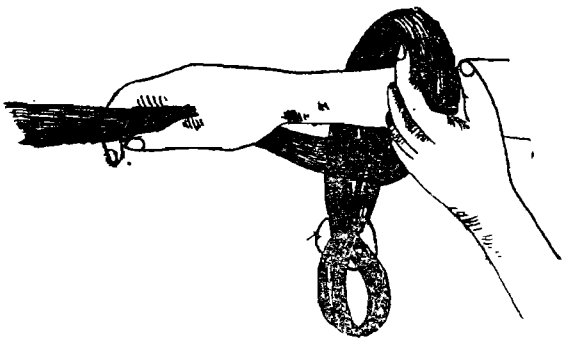
Removing the warp threads

Before weaving the warp yarn sheet has to pass through different operations such as tying of crosses ; chaining or loose plaiting of the warp in a way that the threads do not loose their position ; Spreading of the threads over the wrap beam so that these are wound firmly and evenly on the warp roller ; drafting each wrap end through the heddle eyes, passing of warp ends through the dents of the reed ; and finally their tying up to the cloth roller in small groups. All these operations are completed particularly in fly shuttle looms when warps for long cloths are laid on the loom.

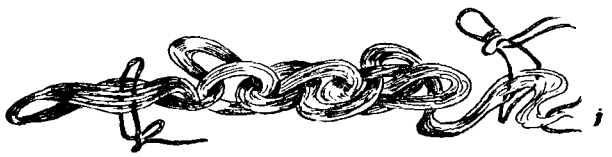
But village weavers avoid some of the operations. This is mainly because the cloth to be woven is of shorter lengths in which the warp can be handled easily. Two warp sticks one about $1\frac{1}{2}$ feet long and the other one of double the size of it are taken. Each stick is passed through the loops at either end of the warp. Then two persons hold the warp from each end. This way the warp is given a soft twist and is wound round the smaller stick. If necessary a longer stick may be used here also. Sometimes the warp is removed from the warping frame by chaining or plaiting the length into a three fold piece. Now the warp is brought near the loom where the weaver's next step is to draft the healds.

Threading the heddles

This is a long time taking process and the job is done with patience. Normally the width of the healds is more than the cloth to be woven. Even if the full width of the loom is used a few heddle



Chaining of warp ends



Plaited chain of warp end

eyes are normally left unthreaded. For preparing cloth of shorter widths such as a muffler, more than half the heddle eyes are left untouched. Threading is done in a way that the healds are perfectly balanced. For this equal number of heddle eyes are left unthreaded on both the sides and only the central portion of the healds is used. For instance if there are 540 warp ends to be threaded in a heald carrying 600 heddle eyes the first 30 and last 30 eyes shall have to left unused. Threading is usually done from right to left. All the healds suspend freely from the heddle horses. The thread with which the cross and loop is tied is broken and all the warp threads are let loose. The relative order of the thread is safe in the stick. The first loop of warp thread is removed from the stick and broken from in the centre. All the loops are broken one by one in the same way and thus two warp ends are received every time. One end is then simultaneously passed from lower and upper loop of the first healds with the fingers and this way it is protected as if held in some eye-let. The end is then passed through the outer space of the loops of the remaining three healds. Then the second warp end is taken and passed through the outer space of the first heald and threaded through the two loops of the second heald. The same end also passes through the outer spaceof the loops of the 3rd and 4th heald.

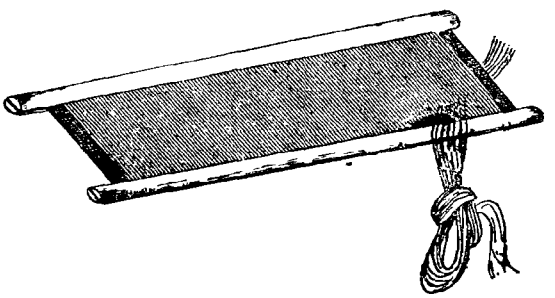
One more warp loop is picked up from the stick and broken to form two warp ends. One of the ends is threaded into the loops of the 3rd heald and the other in the fourth one. The next warp end is again passed through the Ist heald and continued till all the warp ends are threaded in the same way. However, after threading ten or fifteen warp ends, the weaver carefully checks his threading order. All this is done deftly. The process takes about three hours for an expert weaver to thread 540 threads. The threading process is locally called *rue bharna*. In Govt. weaving centres threading is done with a threading hook. Normally two persons carry out the job.

The next step is of threading the drawn-in warp ends through the reed, the process is called dentingand is locally known *rachh bharna*.

Reeding

It is the final stage of their journey from the warp roller to the front roller or cloth beam. Actually the threads are tied to a thin front roller stick which fits close to the cloth beam.

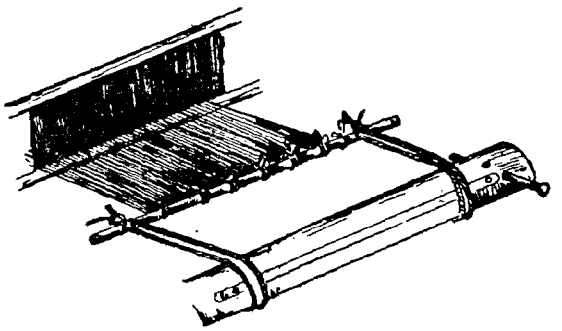
Denting is usually done from right to the left. The threads are drawn from the dents with a reed hook. The warp ends threaded in about two inches of space in the reed are collected in two braids and tied to a long wooden stick or an iron bar. The bar is called the cloth roller stick. This way the threads are prevented from slipping back. Bow knot is used in trying the warp ends to the bar locally called 'panseru' which can easily be undone.



Denting reed

When denting is complete and tie up of warp threads in bunches to the cloth roller stick is over, the weaver checks the tension of warp and the correct order of the threads. Care is always taken that the ends are tied evenly to the cloth roller stick so that all the warp threads lie in uniform tension.

To produce varying textures and designs in the weave different numbers of warp ends may be threaded with certain set spacings in the reed. Varying density of the warp ends alters the design, but it is scarcely ever done by the village weaver. Normally the spacing of the threads in the reed are kept uniform. The weaver puts one warp thread in each dent according to the type of work and the size of reed. Normally threads of coarse yarn need to be spaced one in each dent. But in case the same reed is used for the finer yarn, threads are spaced in twos in each dent. But at the same time weavers keep two or more reeds for different types of work. In case the weaver has only one



Final position of tied up warp threads on the loom

coarse size reed double denting is done for weaving a cloth from finer yarn. According to them finer sized reeds are liable to be spoiled, especially when warp threads of different thicknesses are used.

Denting of two or more extra threads is invariably done in the first and last two dents which form the selvedges.

To weave different patterns and designs, apart from using colour threads in the weft, weaver uses his skill in denting the warp ends in different ways. Some of the popular reeds which are used mostly by the village weavers come in the range of No. 8, 10, and 14. According to weavers denting of warp ends in these different sizes of reeds are divided in the following ways—

No. 8 reed

1 thread in alternate dents gives 4 warp ends per inch.*

1 thread per dent gives 8 warp ends per inch.

1, 2, 1, 2, 1, 2 etc. gives 12 warp ends per inch.

2 threads per dent give 16 ends per inch.

3 threads per dent give 24 warp ends per inch.

No. 10 reed

1 thread in alternate dents gives 5 warp ends per inch.

1 thread per dent gives 10 warp ends per inch.

1, 2, 1, 2, 1, 2, etc. dents give 15 warp end per inch.

2 threads per dent give 20 warp ends per inch.

2,3,2,3,2, 3, etc. give 25 warp ends per inch.

3 threads per dent give 30 warp ends per inch.

No. 14 reed

1 thread in alternate dents gives 7 warp ends per inch.

1 thread per dent gives 14 warp ends per inch.

1,2, 1,2, 1,2, etc. give 21 warp ends per inch.

2 threads per dent give 29 warp ends per inch.

2, 3, 2, 3, 2, 3, etc. per dent give 35 warp ends per inch.

3 threads per dent give 42 warp ends per inch.

In order to convert them into metric lengths conversion table is given below :

1 inch	=	2·54 centimeter
1 feet	=	30·48 centimeter
1 yard	=	91·44 centimeter
1 centimeter	=	0·394 inches
10 centimeter	=	3·937 inches
100 centimeter or 1 Meter	=	39·370 inches

The tie-up operation

Then comes the stage when the loom structure is erected. Pedals are attached to the lams and lams to the lower shafts of the healds. Upper shafts of the headls are tied to the heddle horses and heddle horses to are pulleys and to the transverse bar near the ceiling. The warp threads sheet is unrolled to the extreme end and the two corners of the stick with warp loops are tied with a thick cord and controlled with a long rope. The weaver draws the rope through a wooden hook driven into the wall at the back of his seat at a height of 5 feet and then ties it with a reafknot to another post pitched in the wall near him. This way the warp threads are held by the warp roller and by loosening or tightening the rope knot required tension is given to the threads. As some portion of cloth is woven the knot is loosened and the woven cloth is wound to the cloth roller and

*For measuring lengths inches, feet and yards have been used



again the knot is tightened to form the proper tension.

Preparation of weft

The weft is known as 'bana' in the weaver's terms. The threads of weft yarn are interlaced at right angles through the opening of the warp in an unbroken single thread. The thread is carried either by a cylinder shaped 'nalu' or by some other form of shuttle.

The village weaver receives the weft thread along with the warp yarn from the customers in an equal quantity. Thread for the warp is usually made of a superior quality wool and is strongly twisted. After single twisting its two ply thread is retwisted for the only reason that it should be strong enough to stand the strain of various operations of weaving through which it passes.

But weft yarn is single twist two ply thread. Weavers say that they can use the weakest and roughest thread for the weft without any difficulty.

The method of preparing weft, before it is put into operation is very simple but varies with the use of *nalu* and shuttle. For *nalu* weft is wound on the weft sticks known as kanere, in the form of several loops one above the other. The weaver fills about half a dozen weft sticks at a time and keeps these close by. Some loops of thread are drawn from the stick with the right hand and pushed with the end of the same stick into the long open space of the *nalu*, till the *nalu* is completely filled. Then the thread is broken. When the thread isused up in weaving the *nalu* is refilled.

In the case of boat or kiss shuttles a different method is used. About five inches long bobbins, wound with weft yarn are placed over the metal spindle fitted in the shuttles. The bobbin revolves freely and releases the thread when the shuttle is thrown from one side to the other. About half a dozen or more of bobbins are filled at a time.

Weaving

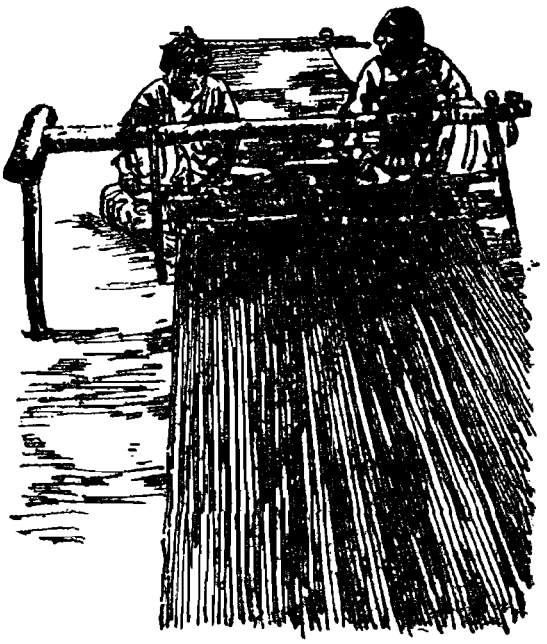
Now the weaver sits in front of the loom and puts his feet over the pedals in the pit. The cloth beam comes close to his stomach. The treadles are pressed in the order of drafting pattern selected for the weave and thus forms a shed or opening in the warp. One of the hands lies usually on the slay or batten. When the pedals are pressed the batten is pushed baek to make the shed wide enough for the shuttle or *nalu* to move freely. The weaver then takes shuttle or the *nalu* in one hand and throws it through the shed from one side catching it with the other hand as it comes out of the shed on the opposite side. This way the thread released from the *nalu* lies between the shed. Then the batten or *hathu* is struck to his side to bring the thread to the edge from where weaving begins. The pedals are again pressed so that the healds are raised alternately to form another shed. Again the *nalu* is thrown from the opposite side and caught on the other end. The thread is beaten towards the fill or the woven cloth. When a few inches of cloth is woven the weaver moves up the temple or *panak* nearer to the fell of the cloth to keep the width of the cloth uniform. At the same time the rope knot near him is loosened and in the weaver releases the warp threads a little. This helps to wind the woven cloth to the front roller. Again the rope knot is tightened at the correct tension and weaving operation continues.

Joining of broken ends.—During weaving the warp threads are liable to break as they have to bear friction caused by healds and reed. The weaver always keeps an eye all such breakages. As soon as a thread breaks he takes a new piece of thread and joins it to the broken yarn behind the healds by giving an expert twist to the ends. Firstly the twist is given to both the ends in one direction and then the twisted piece is retwisted along with the main thread in the opposite direction. Weavers say that the joint received this way is firm and hard. The end of thread is passed through the correct eye of the healds and correct dent and again joined to the broken end in the same way in front of the reed.

No knot is given to the weft thread. As soon as the weft thread in the *nalu* or shuttle is finished, these are refilled. The end of the new thread is simply placed near the end of the finished thread, without putting any knot or joining them and the reed is beaten to the fill.

Weaving of the cloth goes on till the warp threads reach quite close to the healds. At this stage *nalu* does not pass through the shed in a single throw and hence this has to be guided with fingers between the warp at two or three places. When it becomes difficult for the weaver to pass the *nalu* through the shed, weaving is stopped.

The loops of warp are cut at the other end and the stick is removed. This way the broken warp threads are released and the woven cloth is



Weaving on a pib loom

removed with about 5 inches of unwoven warp theads at either end.

Weaving on smaller looms :—Roughly a little less than half of the throw shuttle pit looms in villages are smaller in size. The cloth of about half a yard width can be prepared on them. This is because the healds and reed used by them are of about 30 inches width. *Patties* used forcoatings can be prepared on them easily. Blankets of 54 inches width can be woven on them by a different method. In such cases the weaver prepares a warp double the length of the blanket to be woven. While weaving the whole length the weaver leaves about 8 to 10 inches portion unwoven right in the middle of the cloth. The cloth is removed from the loom. The whole length is devided into two by cutting middle unwoven portion from the centre. These two pieces are then delivered to the customers who stitches them length-wise with a woollen thread.

Loom for Kharcha making

Kharcha a sort of thick mattress is a goat hair fabric. The loom required for weaving a *kharcha* is a very simple one and may be called as table loom. There is no need of reed, healds, heddle horses, pedals or a pit for weaving it. The warp is just prepared by putting the warp threads round two beams placed apart at a distance equal to the length of the hair fabric. In weaving termonology it is called continuous warp. If the width of the fabric is one yard 90, rounds of thread would be sufficient. This way 180 warp ends are received. Four wooden posts are fixed in the ground parallel to each other according to the breadth and length of the laid up yarn. Each beam with the warp thread is put firmly in order to have proper tension in the warp yarn. Now the weaver starts with the picking up of alternate threads and passes through them a flat bamboo stick from one side to the other. To get the cross, which is an important part in weaving, he again picks up the alternate threads by changing the preceeding pick-up arrangement. Here again he inserts another bamboo slat. While doing this the weaver invariably keeps four warp ends at each side to form selvedges. The width of the slat is about 3 to 4 inches. When one of the slats placed in the warp is turned round a shed is formed by the alternate warp threads. This is the shed through which a typical shuttle with weft thread is passed.

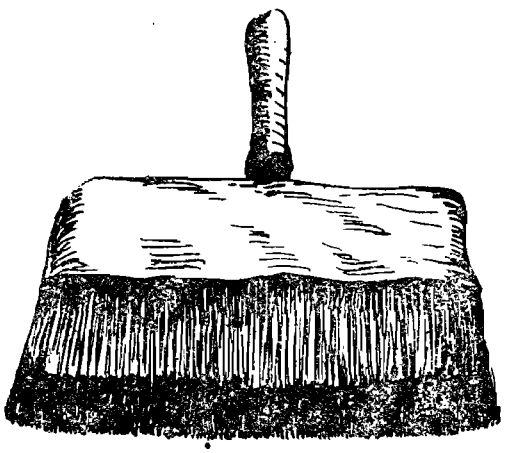
The shuttle which is a 9 inches long piece of flat bamboo with curves at either end is filled lengthwise with the weft thread. The thread is wound round the curves covering the complete shuttle. About a yard long piece of weft is released from it and the shuttle is then made to pass through the shed steadily and with a slight effort. The weft thread is beaten to the fell of the cloth. Again the warp threads are picked up alternately and the stick is passed through the picked up ends. The shed is formed by turning round the stick and the weft is passed from the other end. This stick is beaten to the fell to form the texture. The process goes on till the whole of warp is woven. The weave practised in weaving a *kharcha* is a plain one i.e., one up and one down arrangement. Designs are however derived by using black and white warp and weft threads. When the weaving is complete both the beams are removed. The unwoven ends of the warp in the form of loop get automatically twisted and thus interlock the last weft thead.

Milling :—When the *kharcha* is woven it is delivered to the customer. He keeps it in the water and pounds it with his feet for about 5 or six hours. After that it is kept to dry. With this simplel milling the texture of the fabric gets coser and a fur of hair appears on the surface making it fleecy.

Sizing

The process of sizing, is a technical term in weaving and is locally known as '*mand charhana*'. This is done to make the warp threads strong and to make them able to stand the tension and continuous friction which they receive during weaving. The size is prepared by boiling a 100 gram wheat, barley or rice flour in about one kilogram of water. Size is invariably applied only to warp threads either before they are laid for on the loom or on the dressed up loom. If this is done before preparing the warp, the yarn is put in the prepared rice gruel in which it is moved up and down so that the whole lot gets wet in the paste. After sometime it is thoroughly rinsed. Then the yarn is allowed to dry a little and the half wet yarn is ready for warping process. This method of sizing is applied mostly for cotton warp yarns.

Sometimes sizing is done on the dressed up loom also. Size is applied on the stretched up threads with a big brush. Healds and reeds are moved to and fro to give thorough sizing to whole of the threads.



Brush

Sizing of woollen yarn is normally not done. Only for a very weak warp threads it may be necessary. Pashmina warp threads are weak and need sizing. In wool and pashmina yarns size is applied after the warp threads are stretched on the loom.

With the application of size the yarn increases in weight. But the weight increased this way is negligible. There is a reference in Kautilya's Arthasastra which tells us that in olden times penalties were imposed on weavers who used to increase weight of the yarn beyond a certain proportion.

तन्तुवाया : दशैकादशिक सूत्र वर्धयेयु: । वृद्धिच्छेदे छेदबिगुणो दण्ड : । सूत्रमूल्यं वानवेतनं क्षौमकौशेयानामध्यर्धगुणम्, पत्रोर्णा कम्बलदुकूलानां द्विगुणम् । मानहीने हीनावहीनं वेतनं, तद्विगुणश्च दण्डः । तुलाहीने हीनचतुर्गुणो तण्ड : । सूत्रपरिवर्तने मूलद्विगुण: । तेन द्विपटवान व्याख्यातम् । ऊर्णातुलाया: पंचपलिको विहननच्छेदश्च ।

Samasastry's translation of these lines reads as under :—

Weavers shall increase the weight of the threads (supplied to them for weaving cloths) in the proportion of 10 to 11 (dasaikadasikam) by soaking the threads in rice-gruel. They shall, otherwise, not only pay either a fine equal to twice the loss in threads or the value of the whole yarn, but also forfeit their wages. In weaving linen or silk cloths (kshaumakauseyanam), the increase shall be 1 to $1\frac{1}{2}$. In weaving fibrous or woollen garments or blankets (patrornakambaladukulanam), the increase shall be 1 to 2.

In case of loss in length, the value of the loss shall be deducted from the wages and a fine equal to twice the loss shall be imposed. Loss in weight (tulahine) shall be punished with a fine equal to four times the loss. Substitution of other kind of yarn shall be punished with a fine equal to twice the value of the original.

The same rules shall apply to the weaving of broad cloths (dvipatavanam).

The loss in weight in woollen threads of 100 palas due to threshing of falling of hair is 5 palas.

Milling

After wollen patties are delivered by the weaver to the customers these have to pass through a lengthy washing process, which may be called milling or waulking. In local dialect the process is called *mandai*. By milling the texture becomes close and dense. This makes the cloth thick and gives it a proper shape. At the same time cloth shrinks in breadth and length at the rate of 10 per cent. If the milling process is continued for longer times the *patti* becomes shorter in proportion. Before milling the cloth gives a gauzy look. But after milling weaves becomes invisible and the wool fibre raises like a fur on the cloth.

The cloth is put in the hot or cold water and one or two persons start pounding it with feet. Then soap nuts or soap is put in. It is given a thorough cleaning. The position of the cloth is reversed every now and then and the pounding continues. When the cloth is properly milled this is thoroughly washed in flowing water. All the dirt and particles of beaten soap nuts are washed away. Squeezing of the wet cloth is invariably avoided.

Now the two ends of the cloth are held by two persons at each end. They pull the cloth to their sides to stretch it to the possible extent. Then the two ends of it are either tied together to a wooden slab near the ceiling of the house or to a big tree. One or two pieces of stones are put in the loop made up in the suspended cloth. This keeps the cloth at the stretched-up length. In a day or two the cloth dries. It is now rolled and is ready for use.

It is observed that the *patties* prepared for personal use are milled for a longer time as compared to those prepared for sale. Sale price of *patties* may range between Rs. 3 to Rs. 5 per *hath* or half yard.

Dying

In villages woollen, pashmina or other yarns are normally used in their natural colours. Whenever colour patterns are to be inlayed on shawls and other fabrics weavers use coloured threads purchased from the market. For inlaying coloured patterns on shawls *dohroos* threads of marino wool are bought at the rate of Rs. 25 to Rs. 30 per 500 grams. In some cases weavers or villagers prepare their own coloured yarn. In the past, dye colours were obtained from the juices of various types of roots, leaves, flowers and tree barks. But to day the purchase dyed yarn and colours. Now there are few weavers or villagers who would do this dying work from vegetable colours.

Dye stuffs :—Normally villagers dye the yarn, before giving it to the weaver. Sometimes the weaver may do this job and charge the customer. The process is simple. Dye stuffs used for woollen and for cotton yarn are different. Colours used for woollen yarn are available for 50 paise to 75 paise per ten grams and those for cotton yarn cost between 25 paise to 40 paise per ten grams. Colours may be black, blue, brown, green, grey, orange, red and yellow.

About 25 grams of required colour is sufficient to dye one kilogram of yarn. The colour is first diluted properly in a small amount of water and then mixed, in a vessel containing water. This is kept on the fire and the mixture is boiled for about half an hour or more. To dye wool a few drops of hydrochloric acid, or 30 grams of common salt is added to the colour. This helps in making the colour fast.

After thorough boiling the vessel is removed and placed to cool down. When the water is lukewarm the yarn is immersed in it and frequently worked up and down for about 20 minutes. After this the yarn is removed and squeezed and dried. Normally the yarn is not dried in the sun as some colours fade when these are put in the sun.

Vegetable dyes.— Decades ago villagers used to dye yarn or cloth with herbs, leaves, flowers and bark of trees. Some weavers say that some coloured clays were also used as dyes.

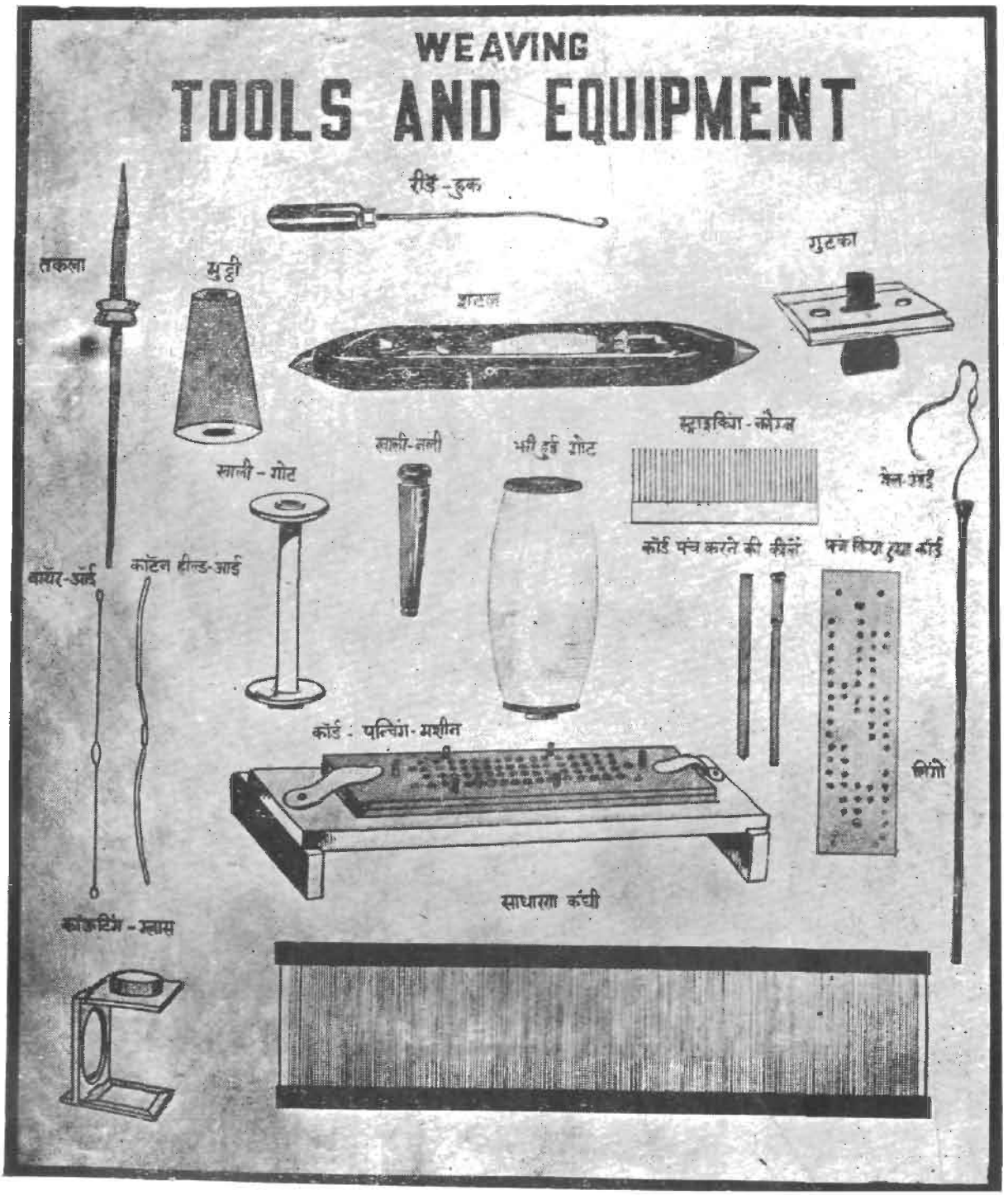
The bark of walnut is a popular dye stuff, giving brown colour. To dye one kilogram of yarn about 200 grams of bark is sufficient. To get dark brown colour more bark may be added. The bark is put in a vessel in about one liter of water and is boiled for a long time. When about one fourth of boiled water remains it is strained. The bark is squeezed to take out every drop of colour. In this water about one and a half liter of fresh water is poured. The mixture is again put on the hearth for a little while. As soon as it gets slightly warm the vessel is removed and the yarn is immersed in it for about half an hour. After that the yarn is taken out, squeezed and spread in the open to dry. The yarn gets the brown colour.

To dye yarn in yellow colour roots of a particular grass called *'aikari'* are used. The grass grows abundantly near marshy land. The roots of this plant are collected and dried in the sun for few days. The dried roots weighing 400 grams are thoroughly ground in the form of a powder. The powder is boiled in about half liter of water for sometime. After boiling, the water is drained or filtered through a piece of a thin cloth. Now one liter of fresh water is poured in it and the mixture is heated for few minutes. Thereafter the yarn is immersed in the mixture and kept therein for about half an hour. The yarn is taken out, squeezed and dried in the open. This way the yarn is dyed in yellow colour.

Basic weaves

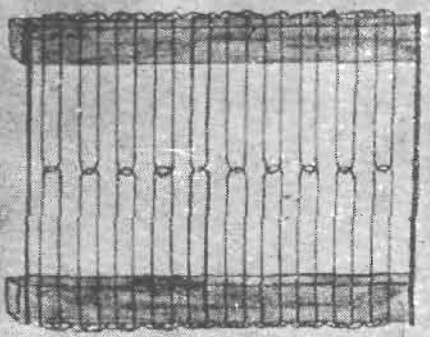
Most common weaves employed by the village weavers and those working in the Government Weaving Centres are plain weave and twill weave.

WEAVING IN PICTURES

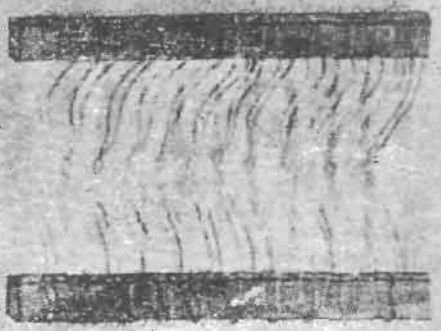


DIFFERENT KINDS OF HEALDS.

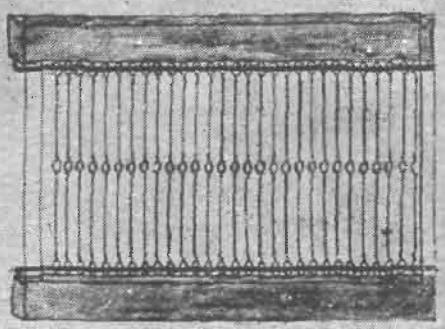
COUNTRY HEALD.



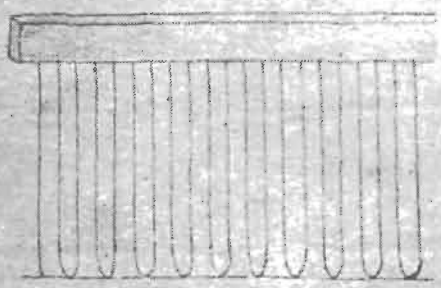
VARNISH HEALD.



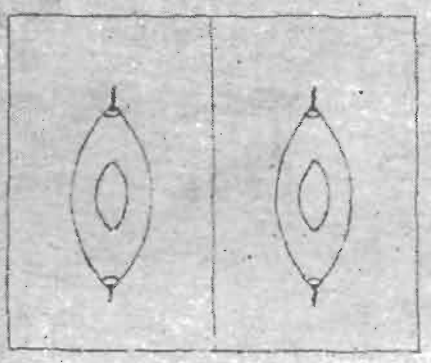
WIRE HEALD.



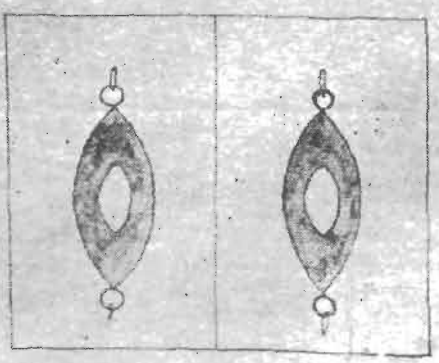
HALF HEALD.



BRASS HEALDS.

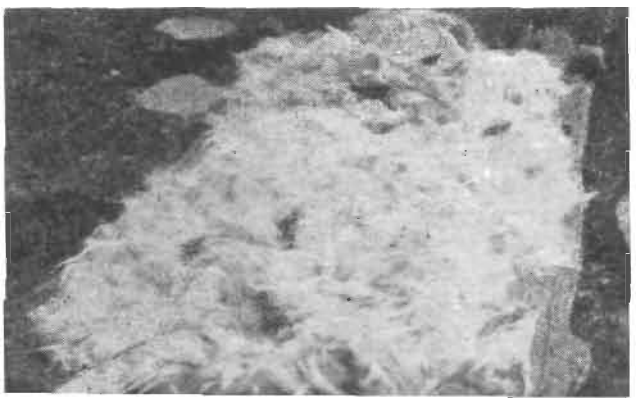


GLASS HEALDS.



Shearing a Goat

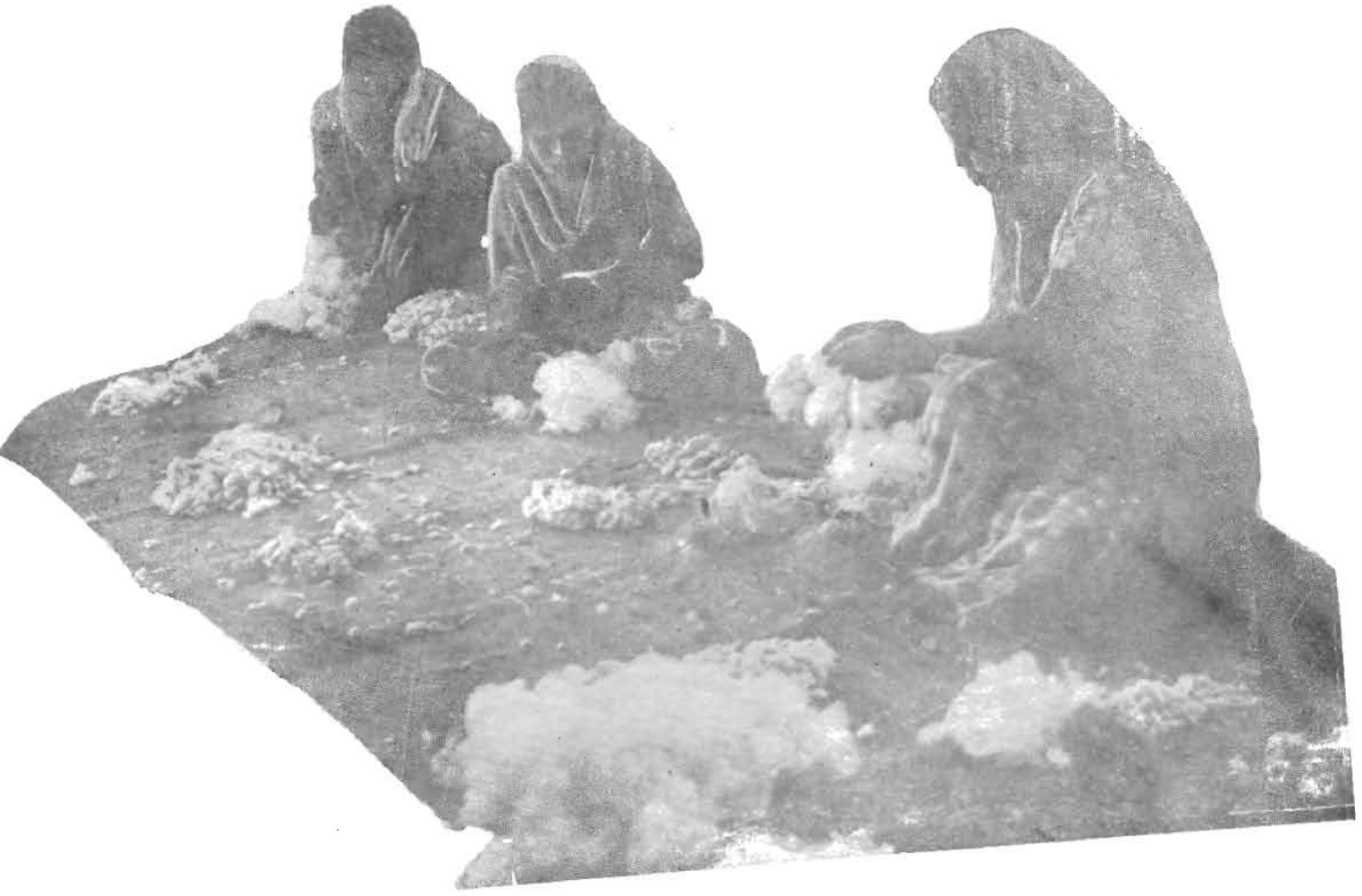




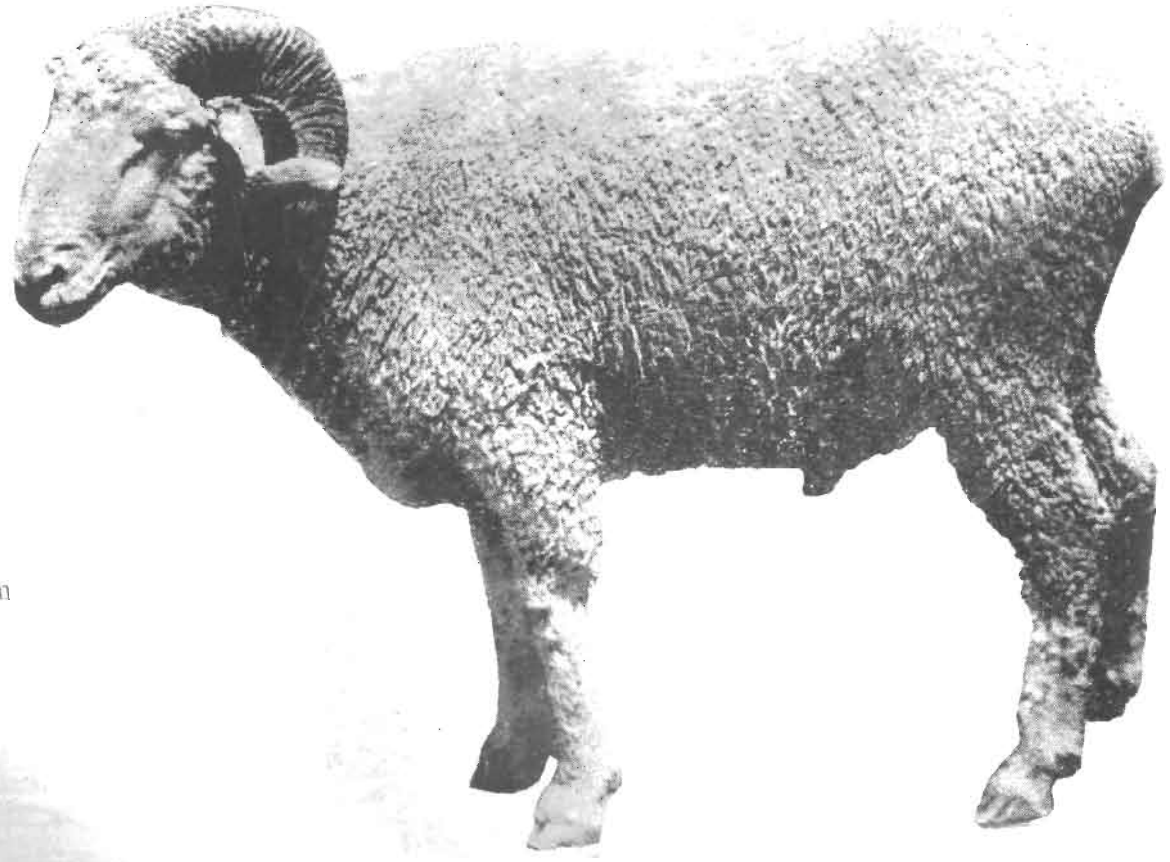
Goat hair



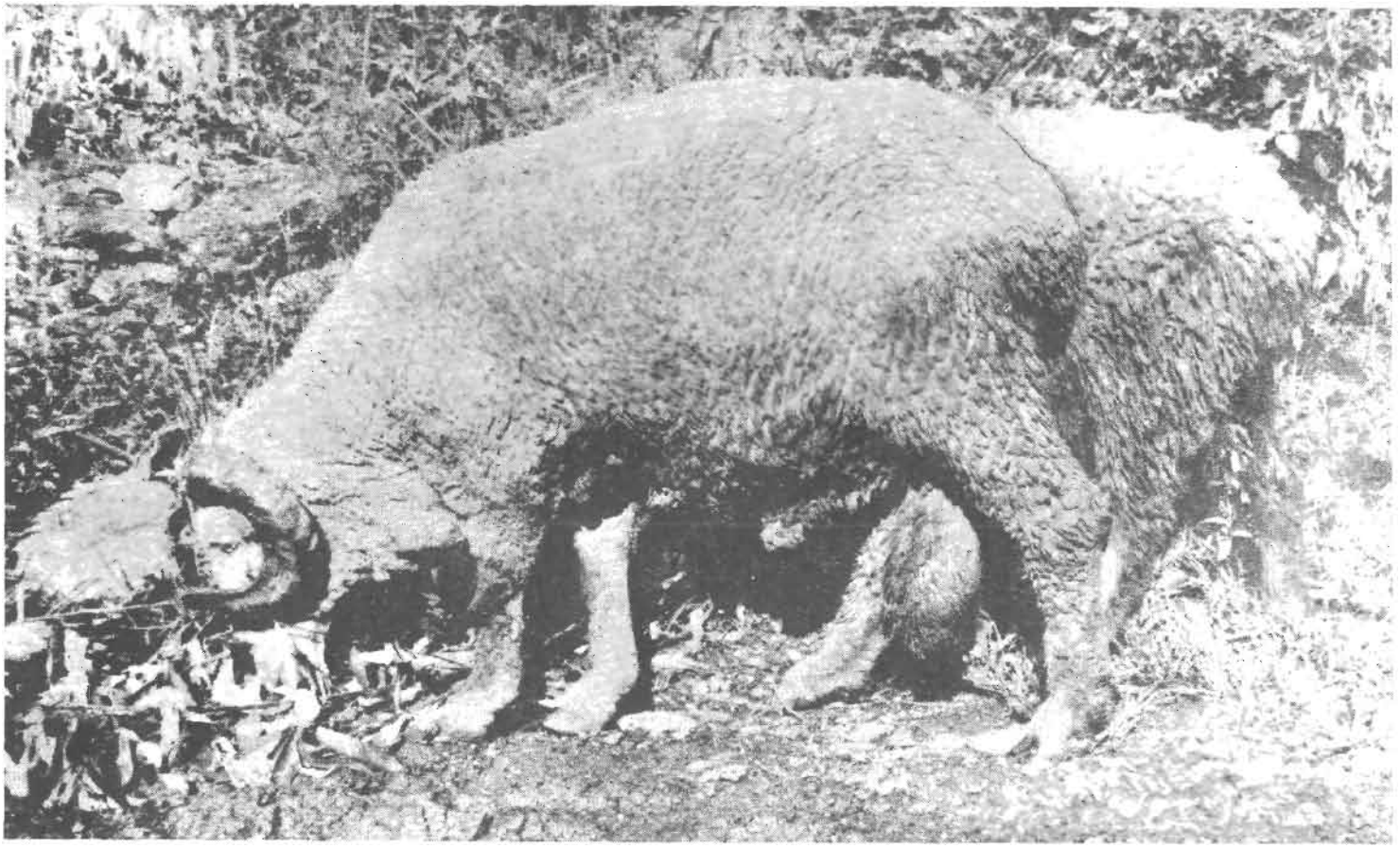
Unwinding the Cocoons.



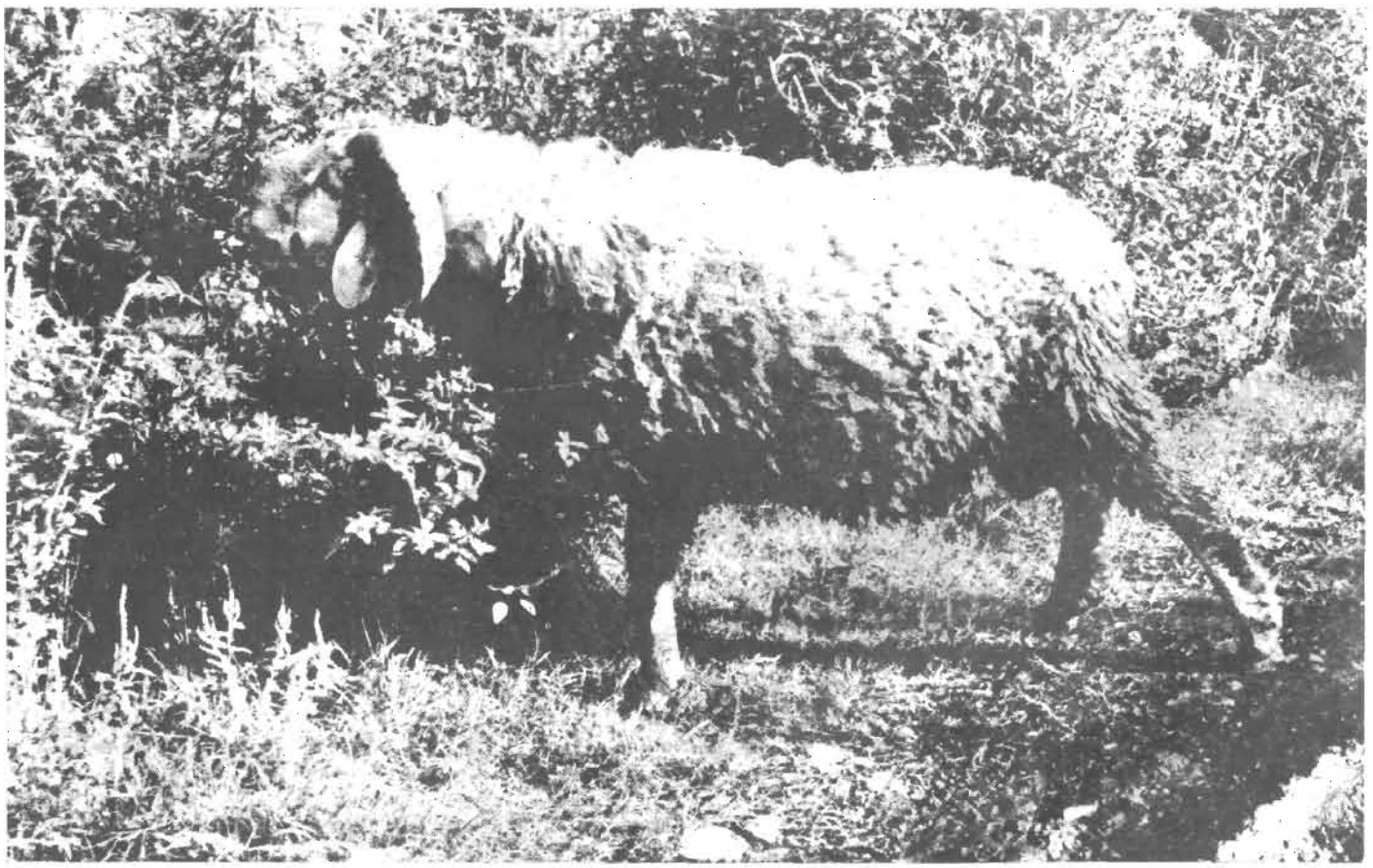
Cocoons residue being teased



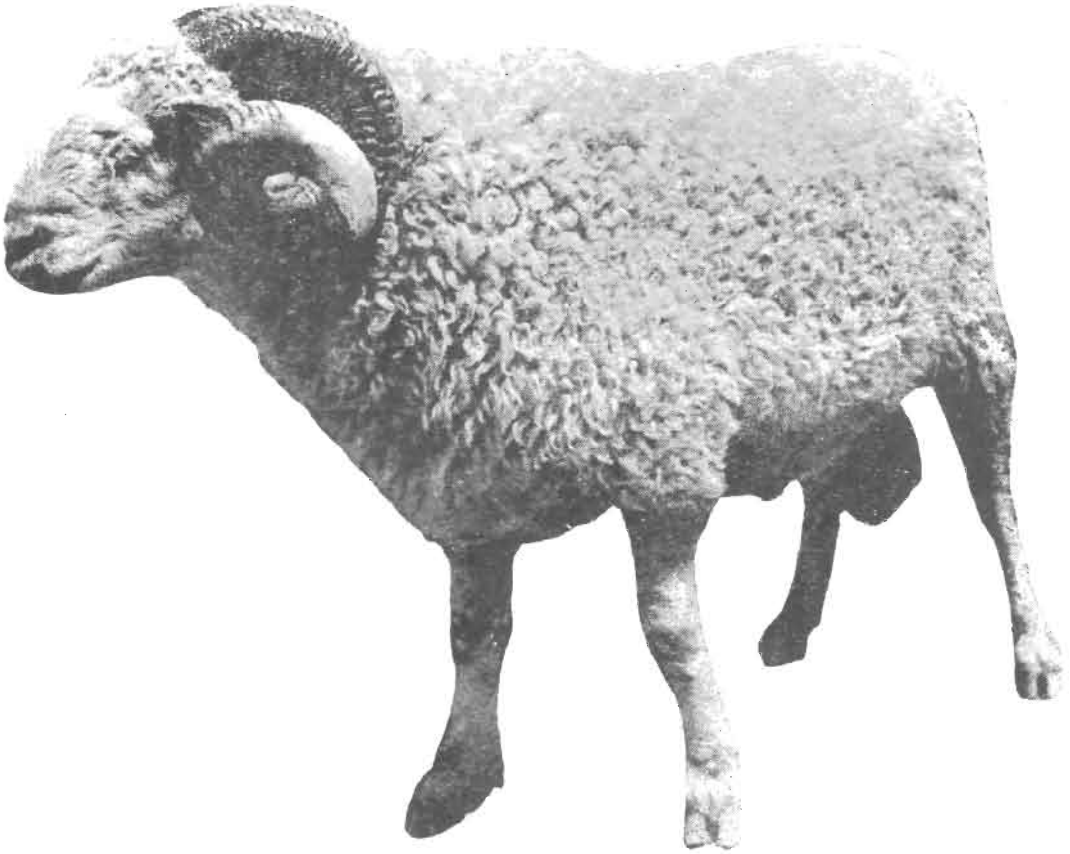
A Ram



Imported Ram



Imported Ram

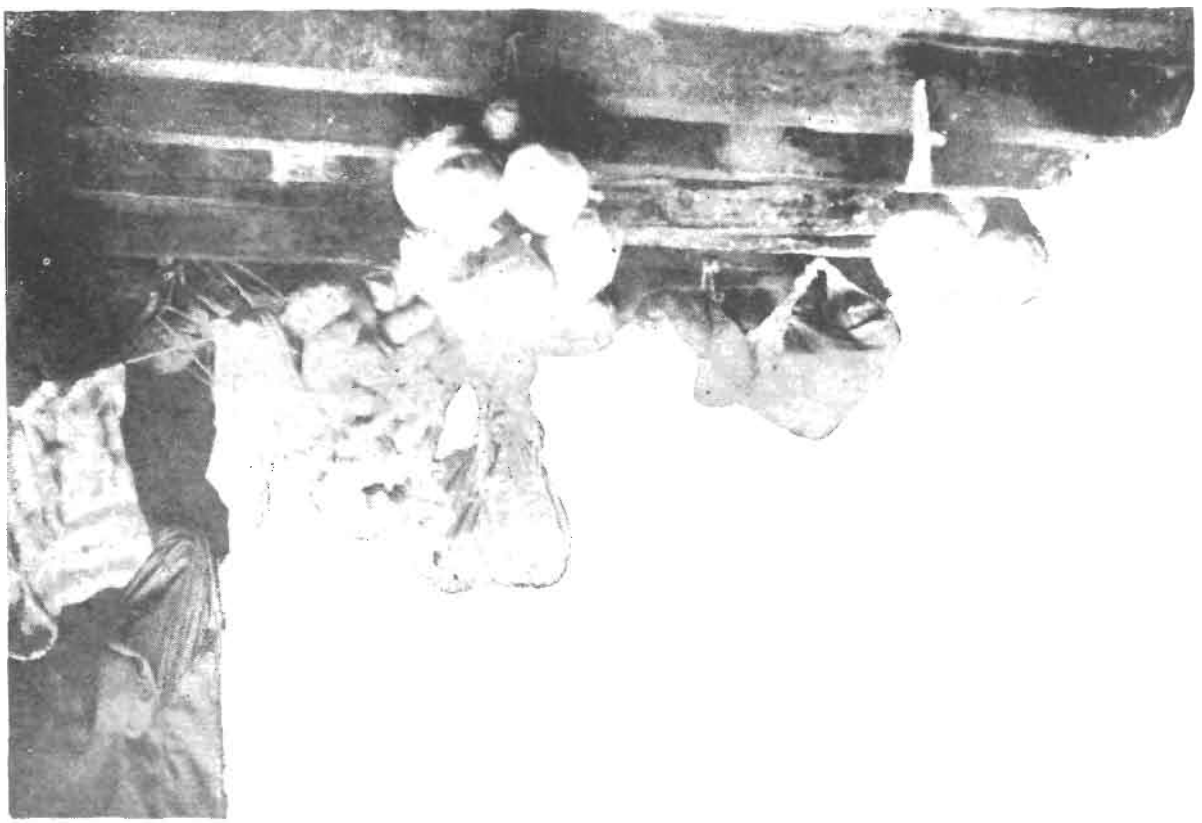


Improved variety of Ram

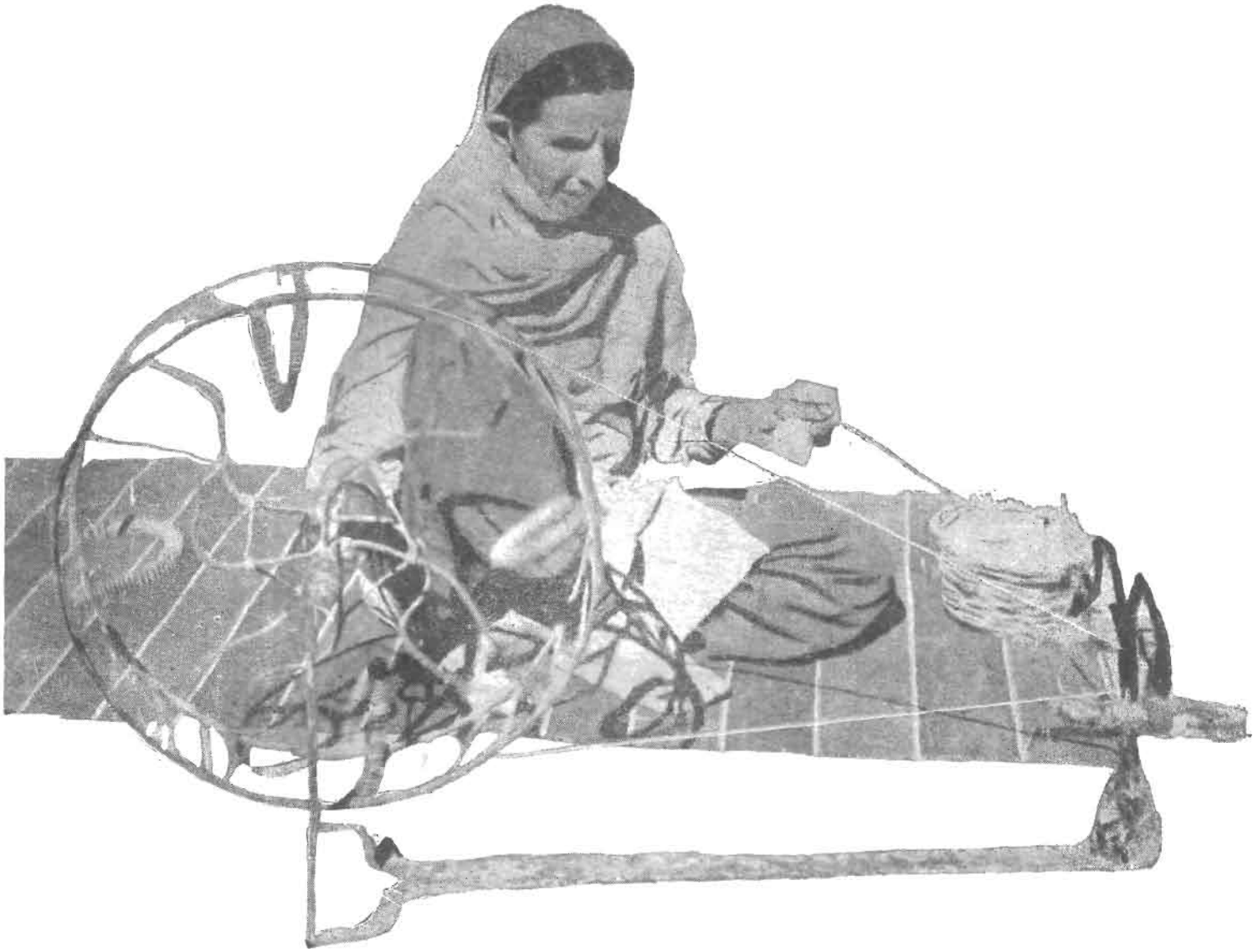
Cocoons being packed



Wool for sale in Laki fair



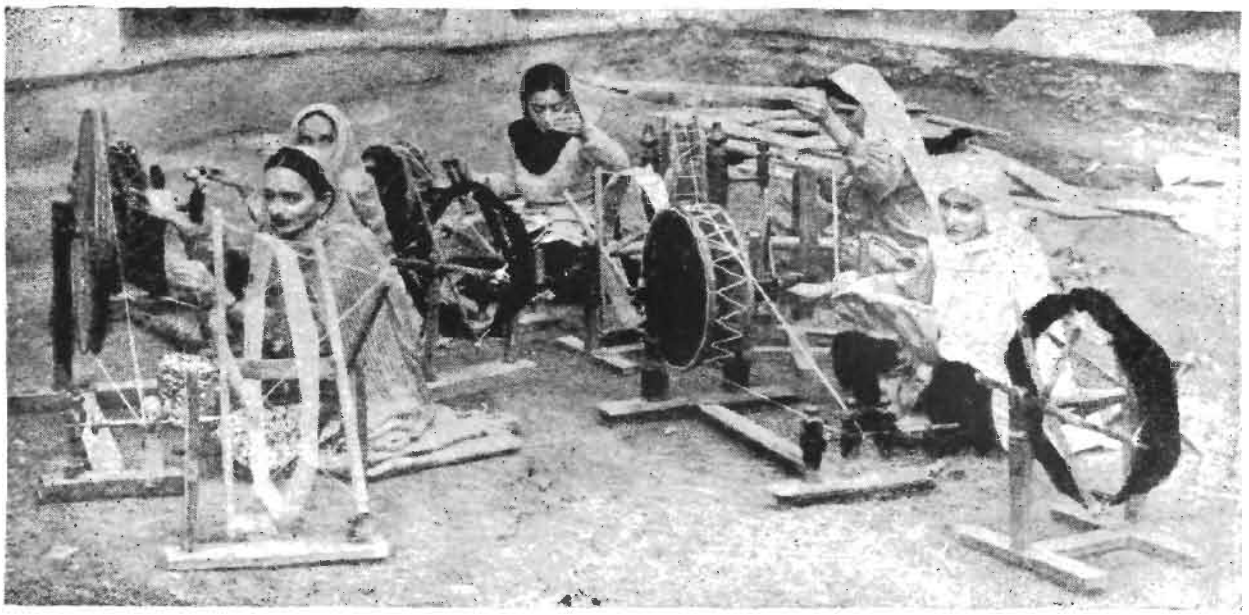
Yarn hung up on the rafter on weaver's workshop



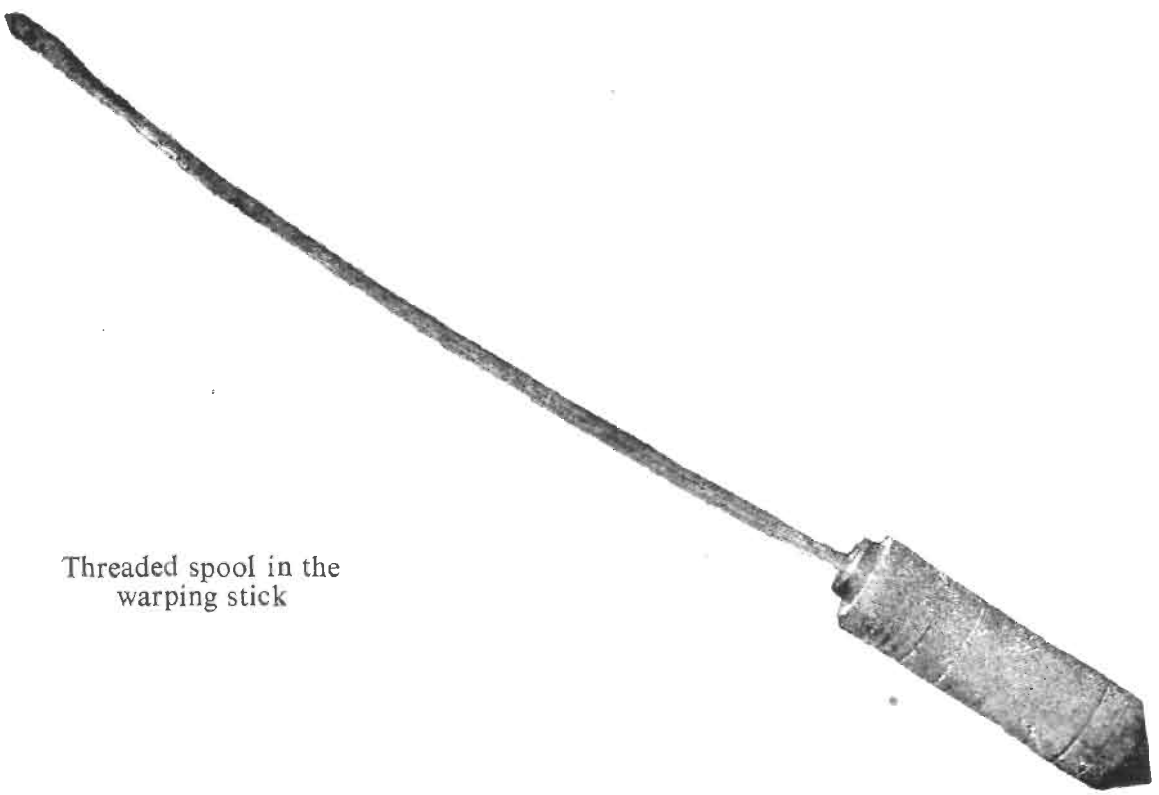
Spinning on a wheel spindle



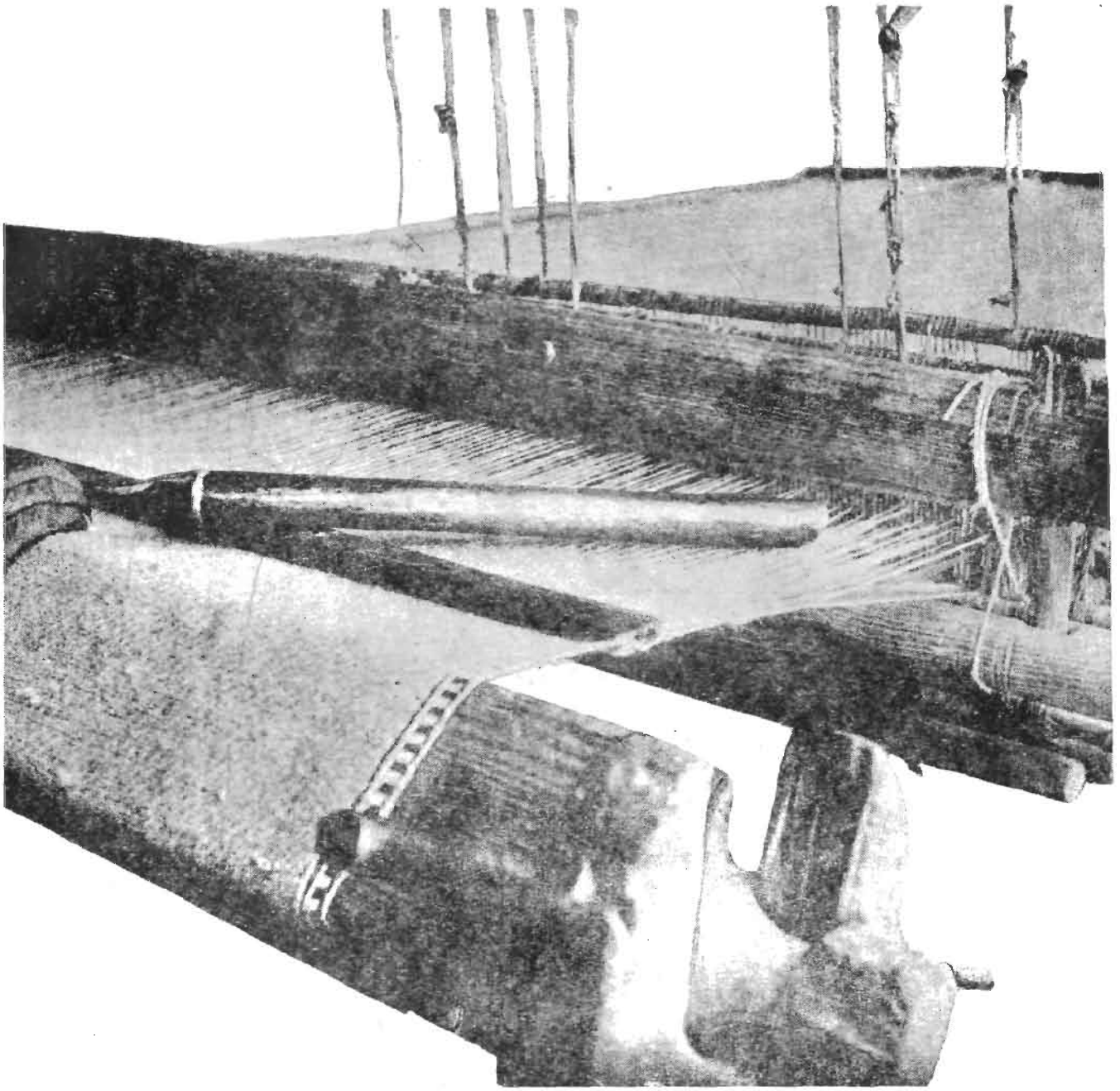
The process of peg warping on the ground



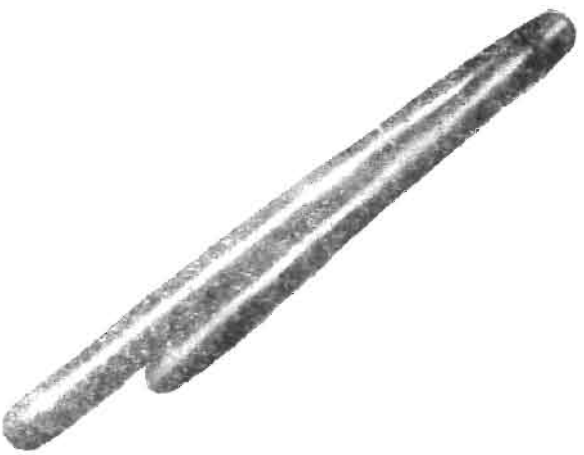
Spinning and pirining yarn



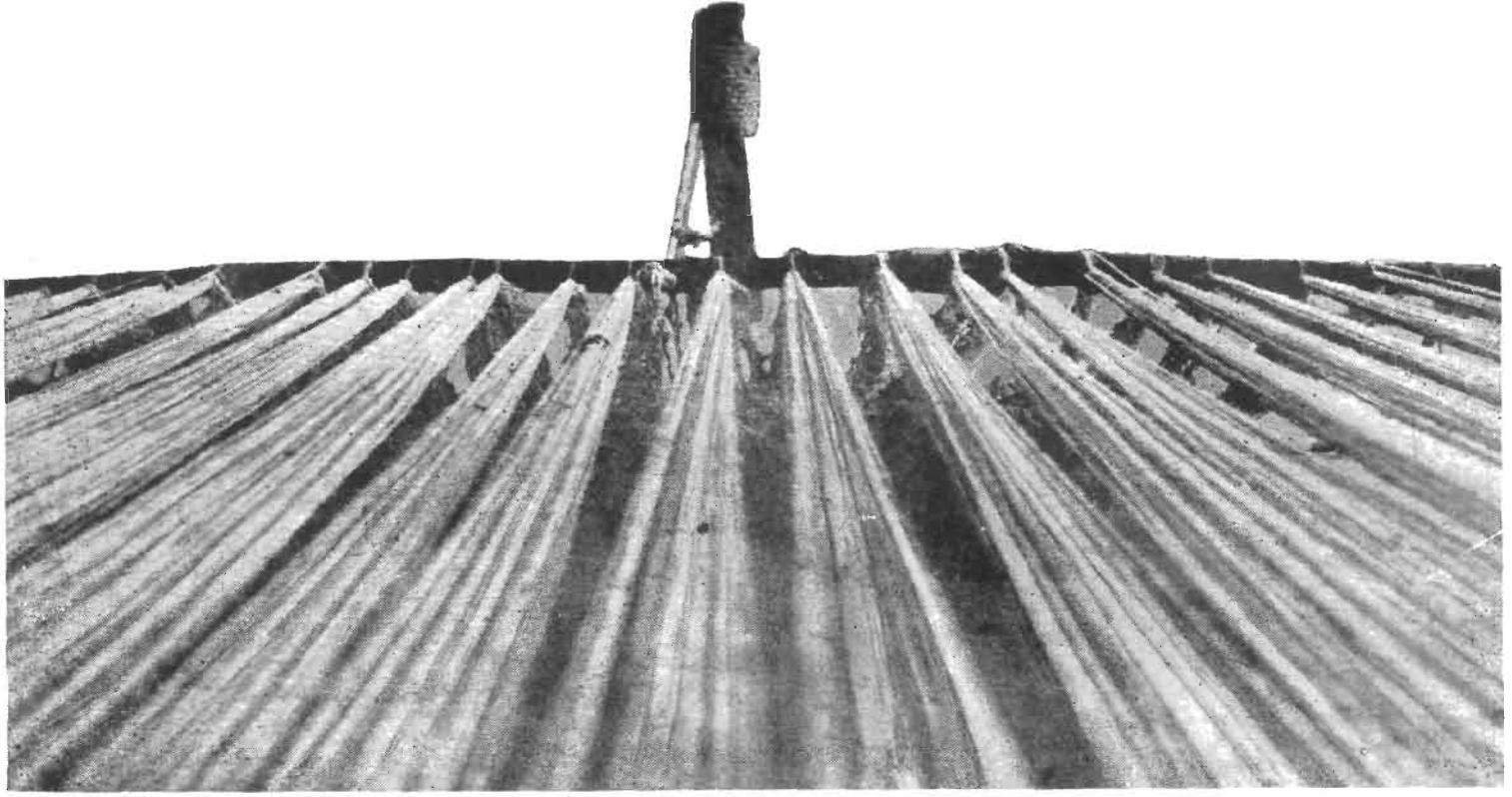
Threaded spool in the warping stick



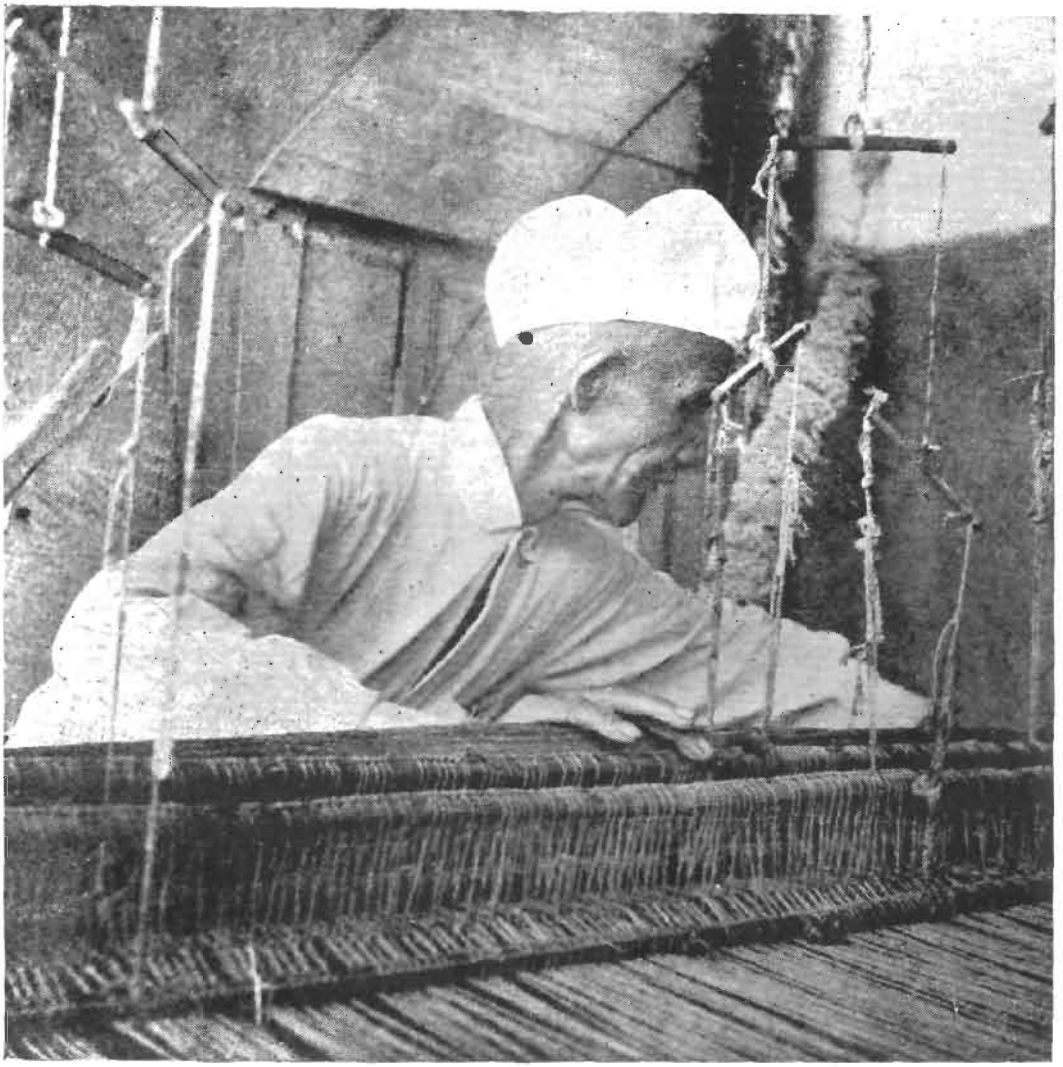
Loom in initial process of weaving



Nalu
(A type of an old
village shuttle)



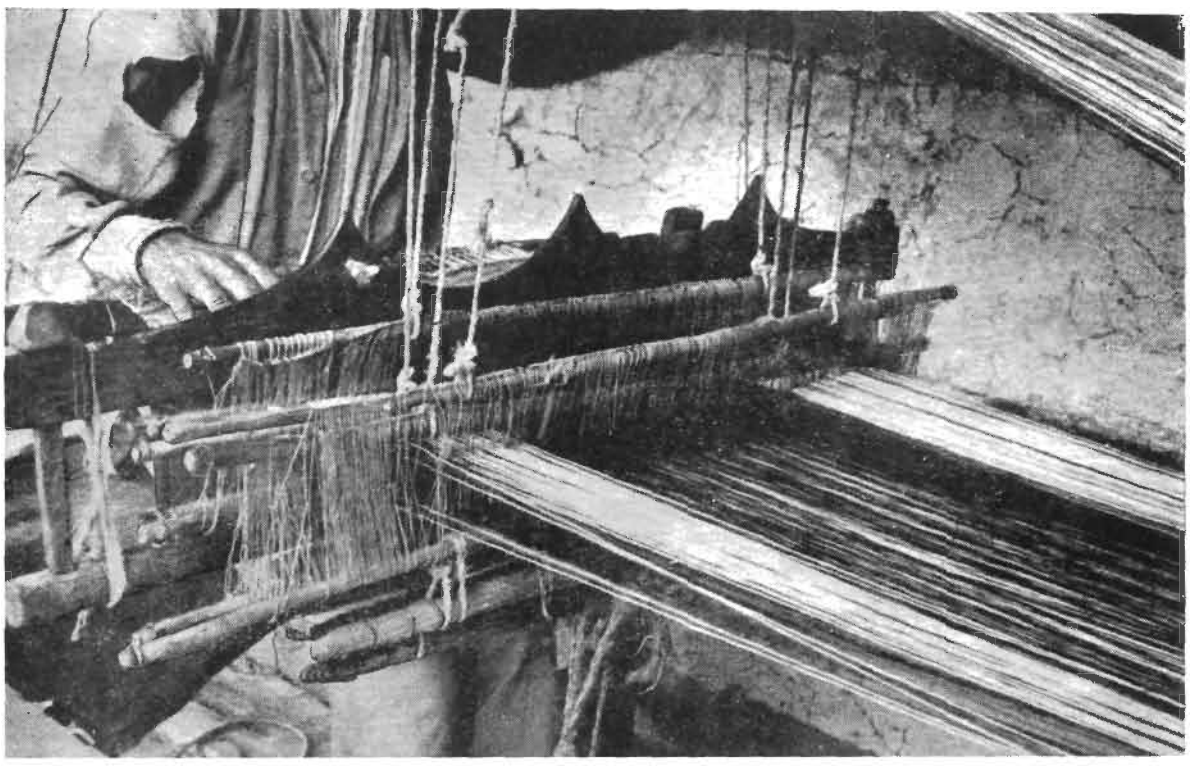
Warp laid down on loom



Village weaver throwing the shuttle



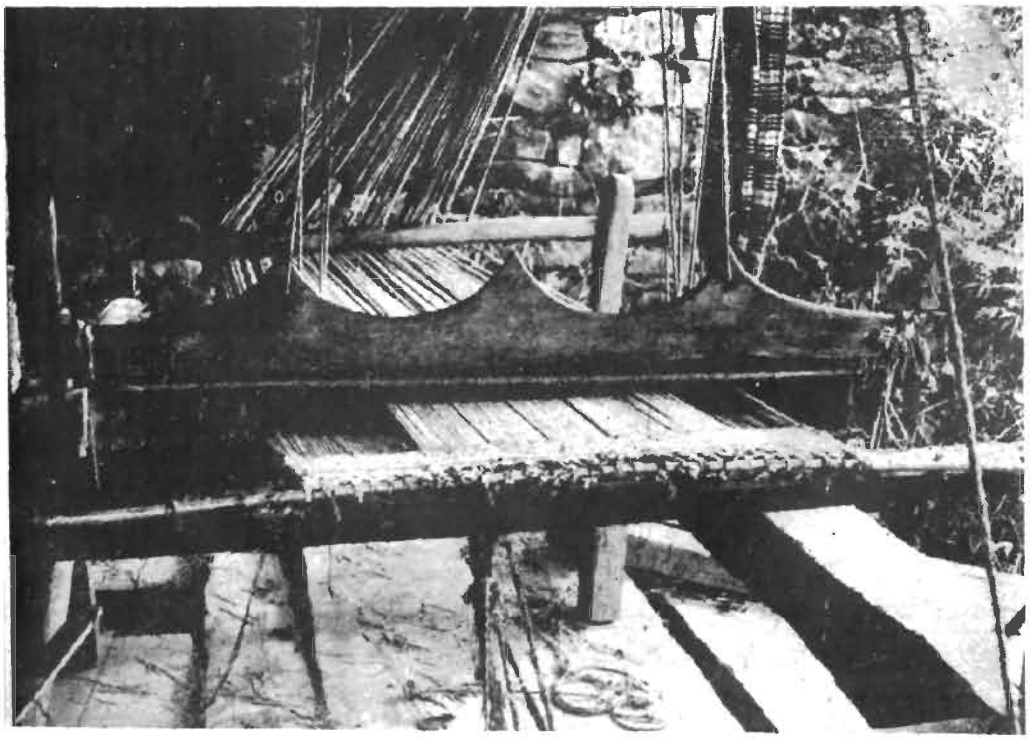
Threading the healds



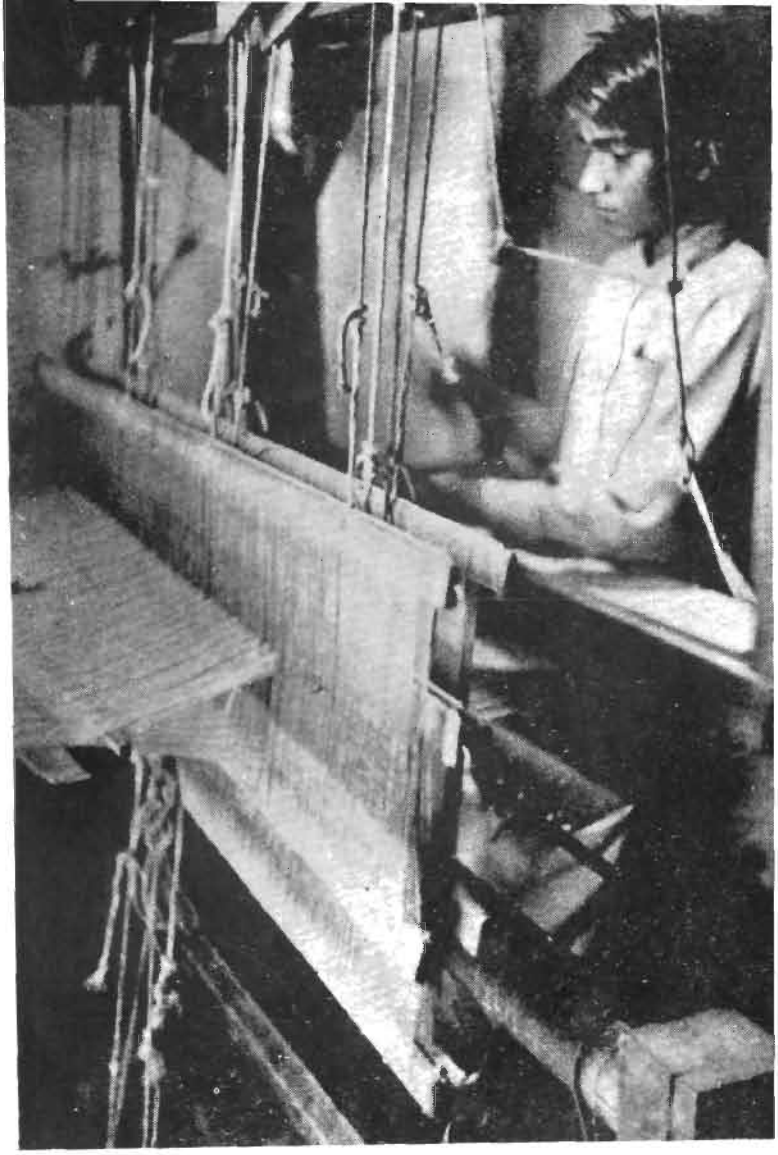
Loom showing the raised healds in weaving



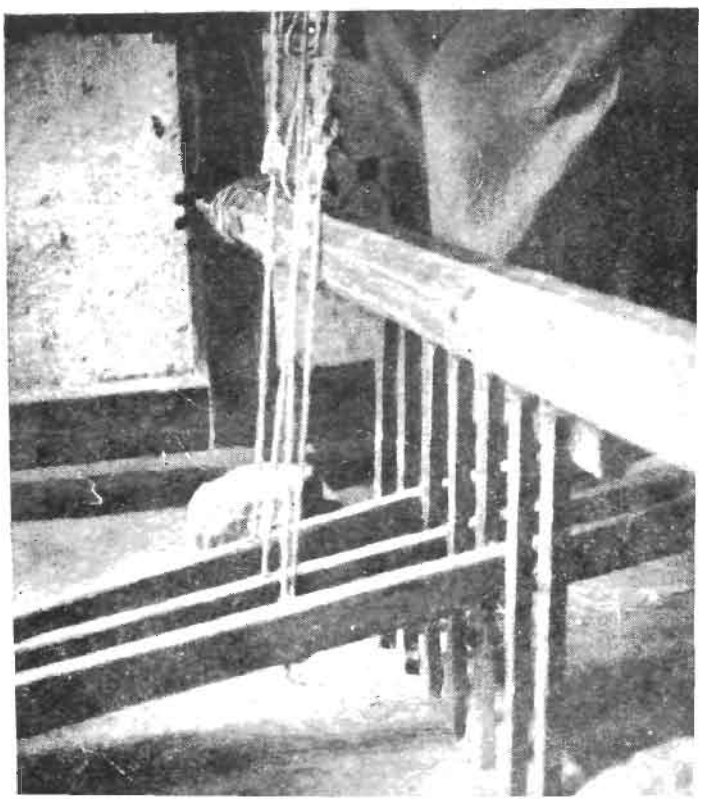
The weaver filling in the hollow shuttle (Nalu) with weft thread



Dressed up loom



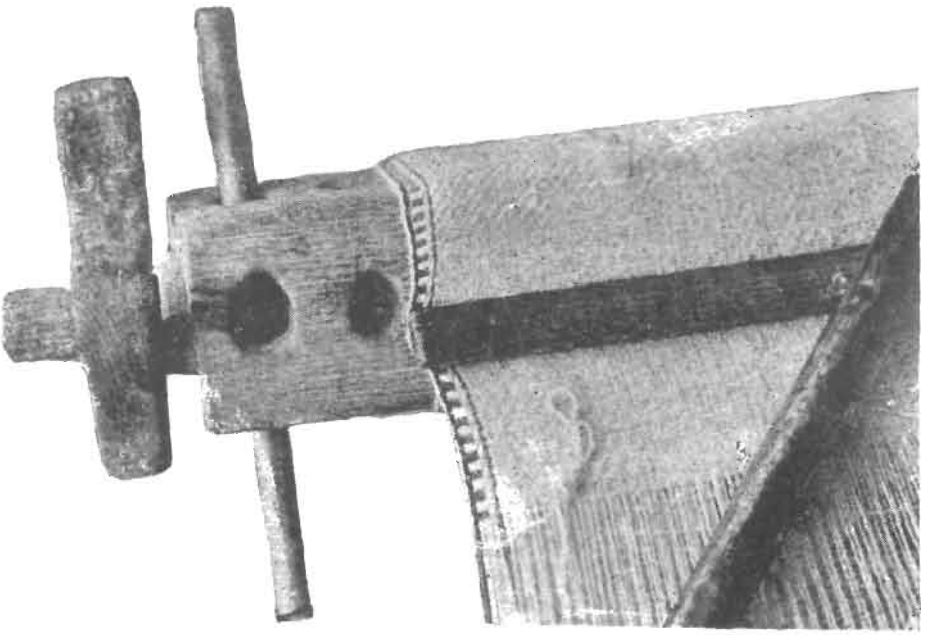
A trainee learning weaving



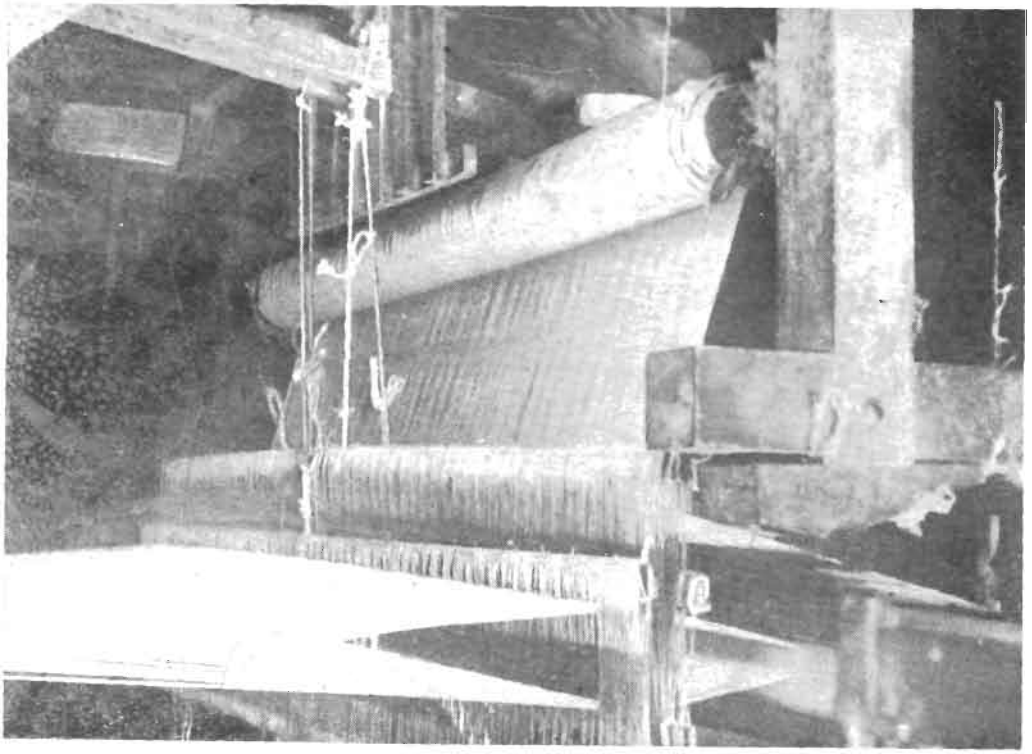
Portions of the loom showing treadles



Using a pit loom



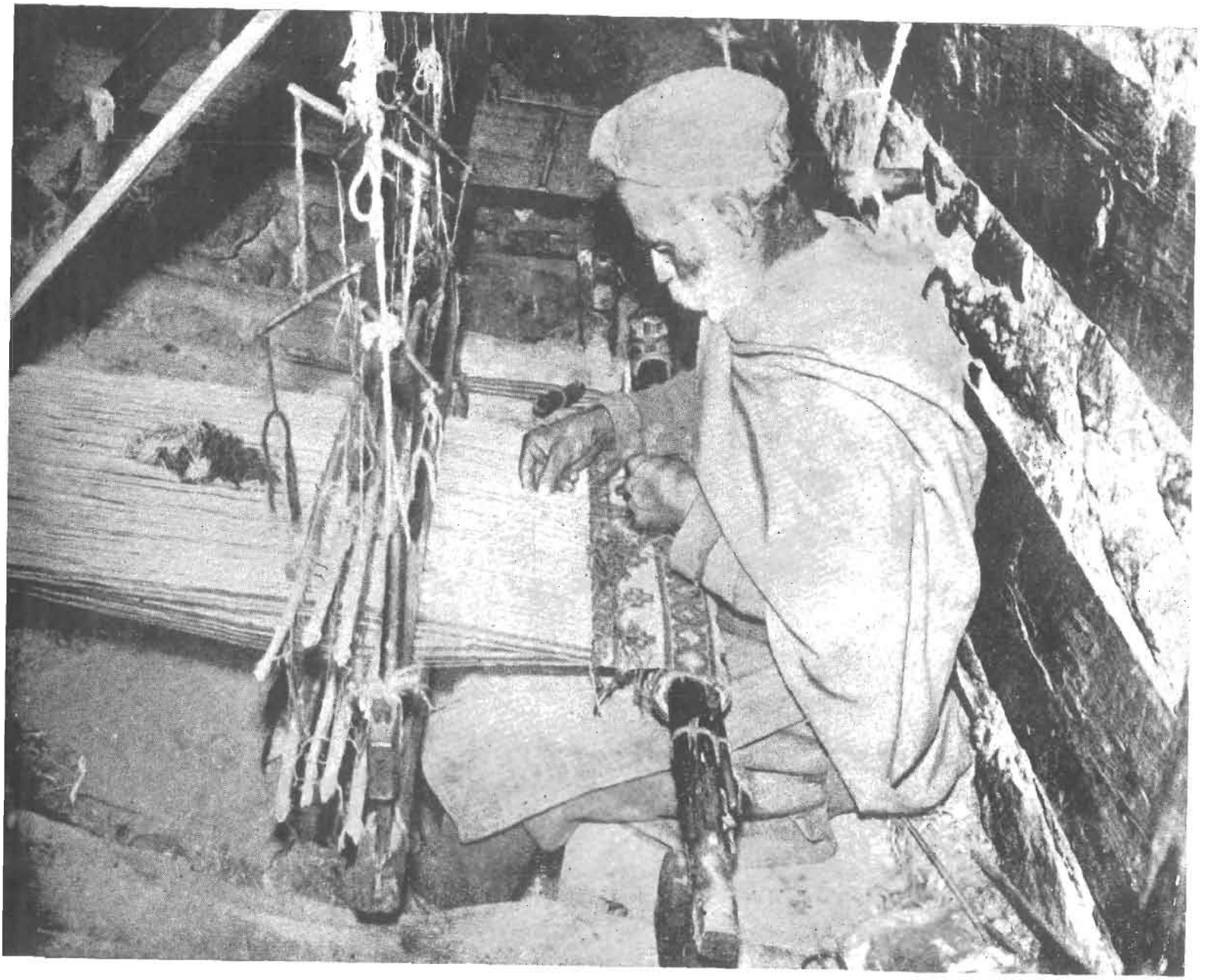
Right hand corner of a loom-weaving in progress



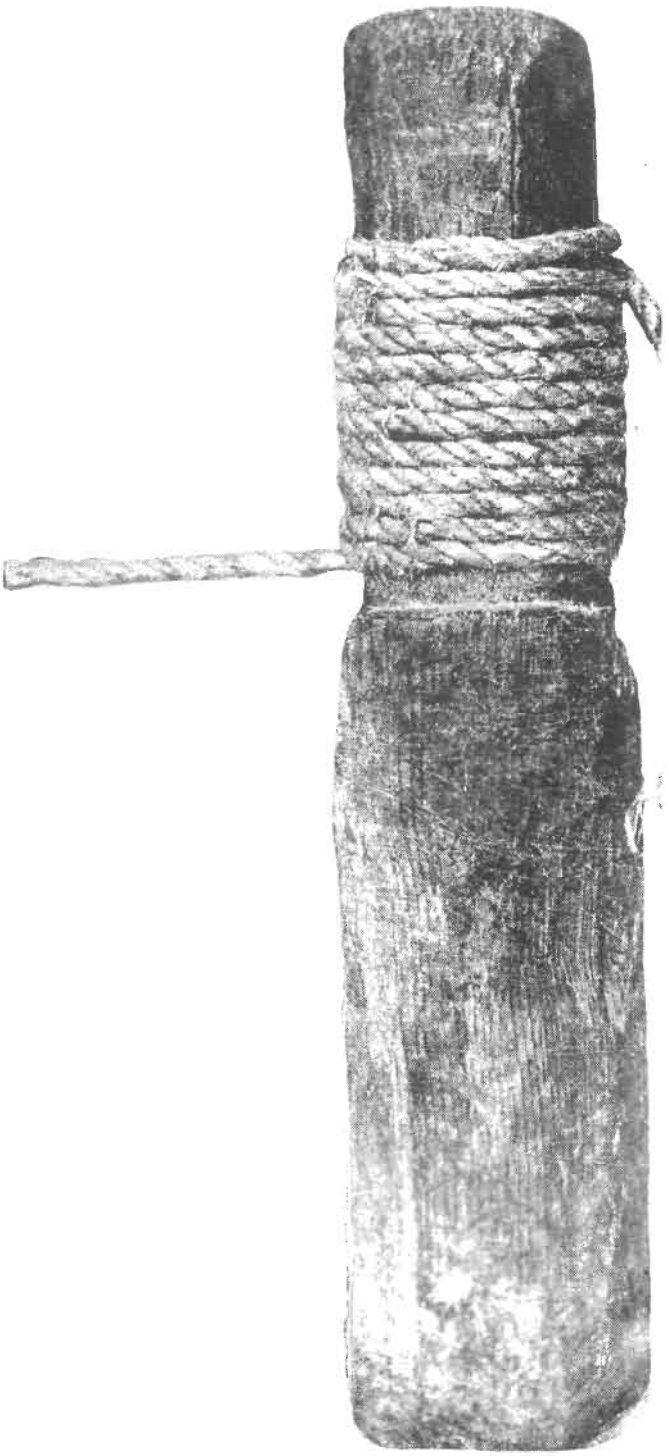
Loom showing the tie-up position of treadles to shafts

Mending the broken thread

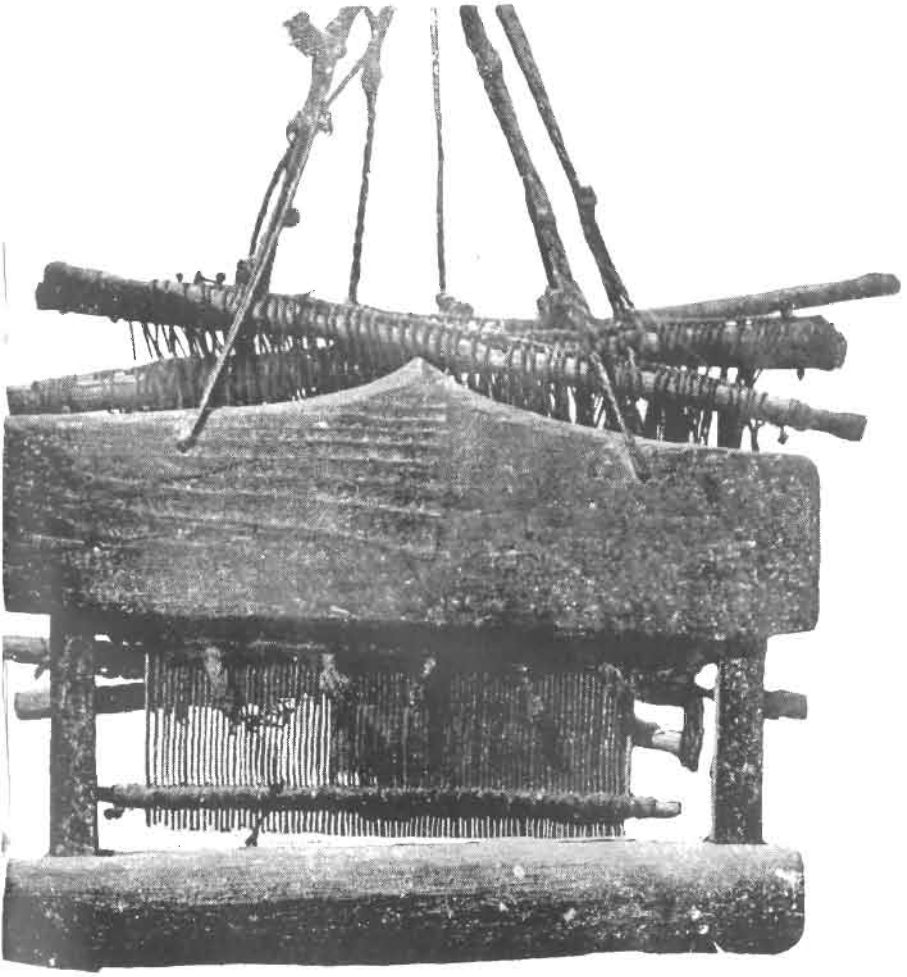




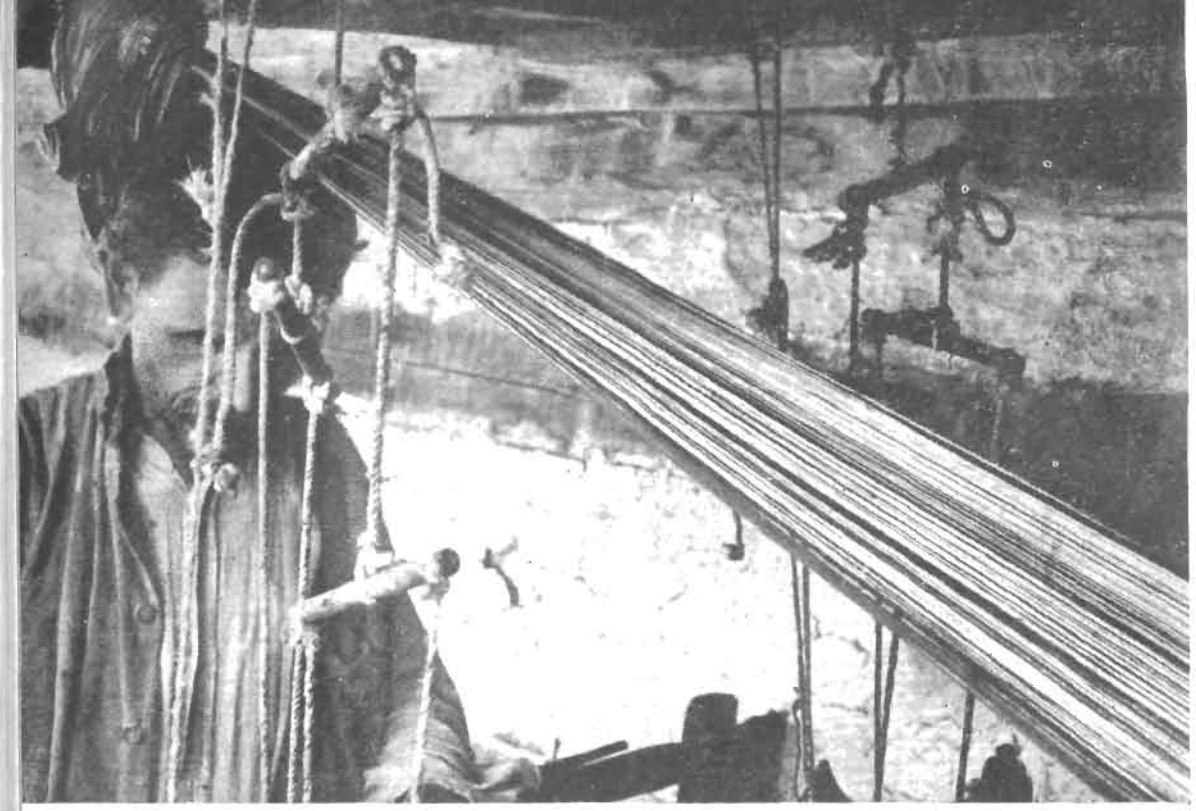
A skilled weaver of Kothi village using coloured threads for patterns on a shawl



Post controlling the rope

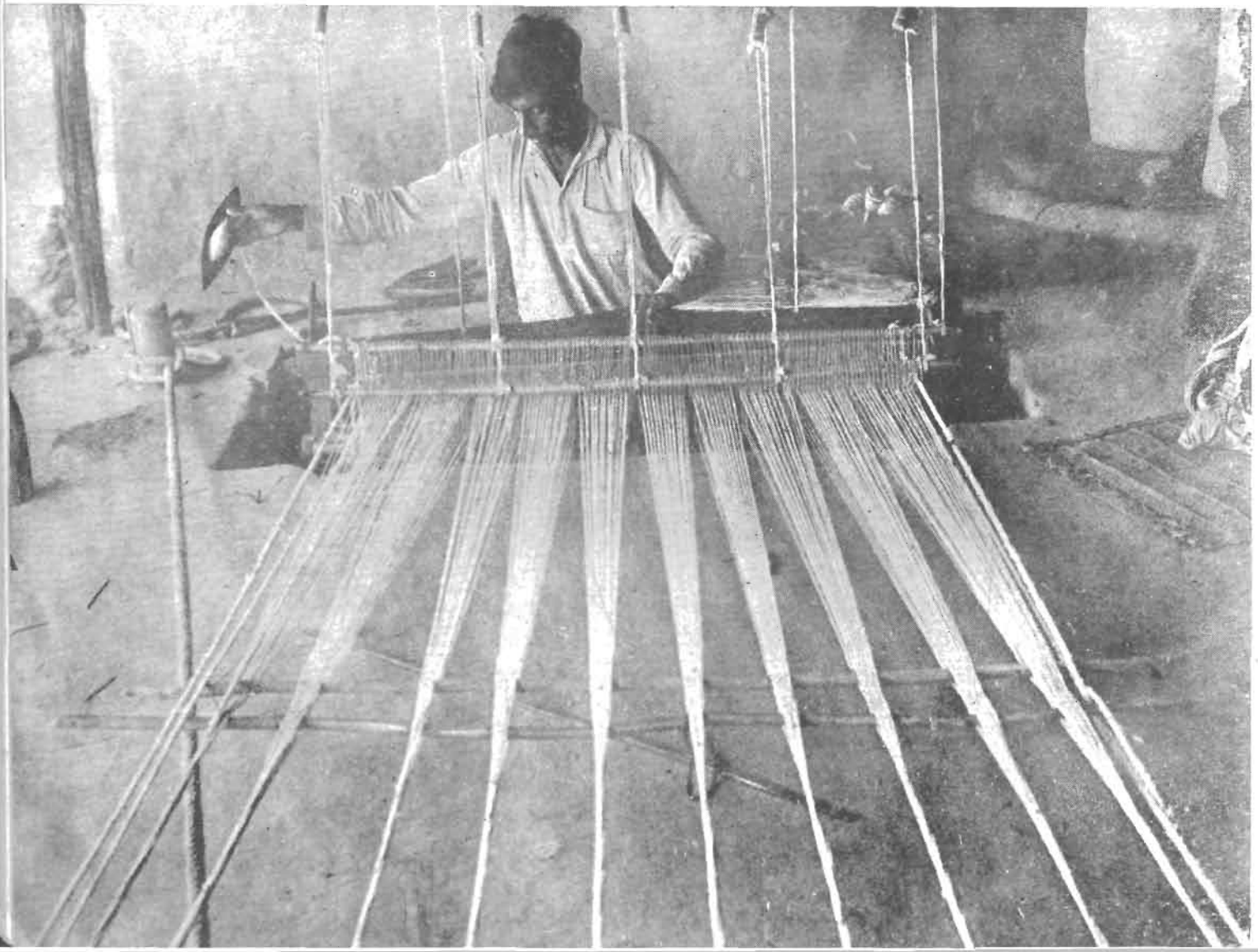


Front view of the village loom



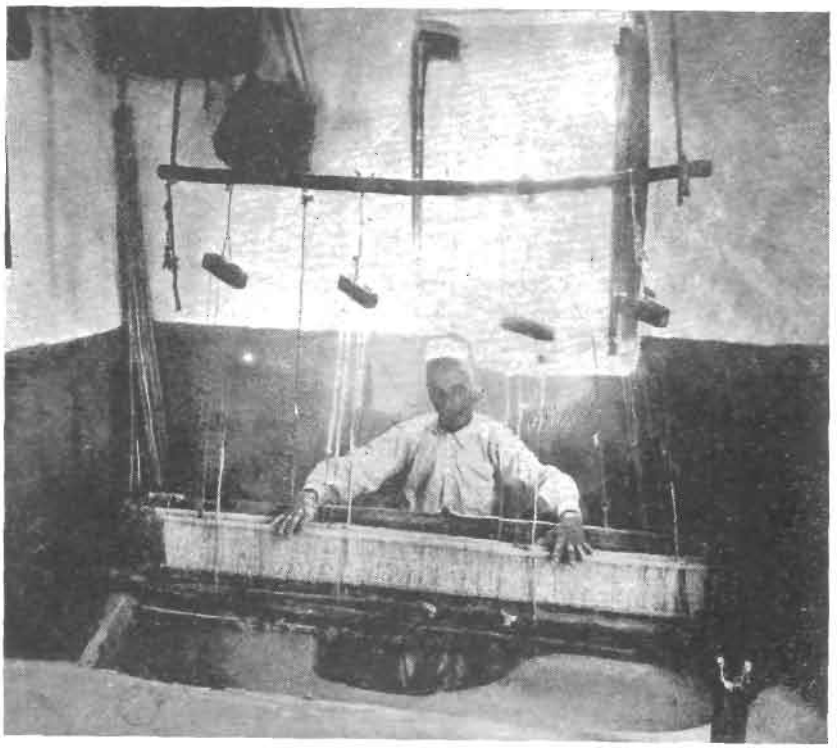
Loom showing the hanging heddle horses and the laid-up yarn drawn over the head of the weaver

Weaver throwing the shuttle carrying bobbin with weft thread





A trainee weaver beating the weft

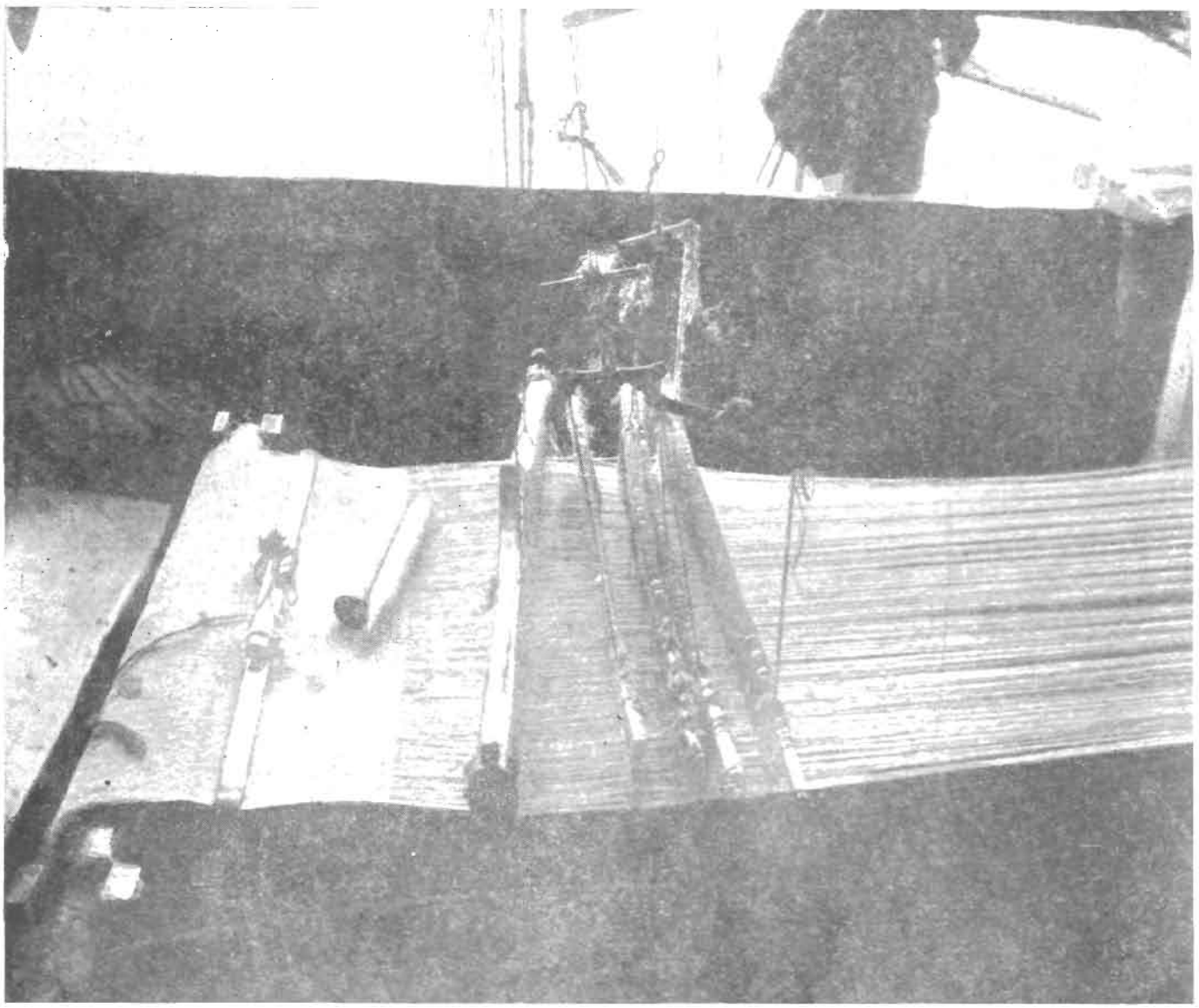


Weaver setting the healds



Weaving in progress

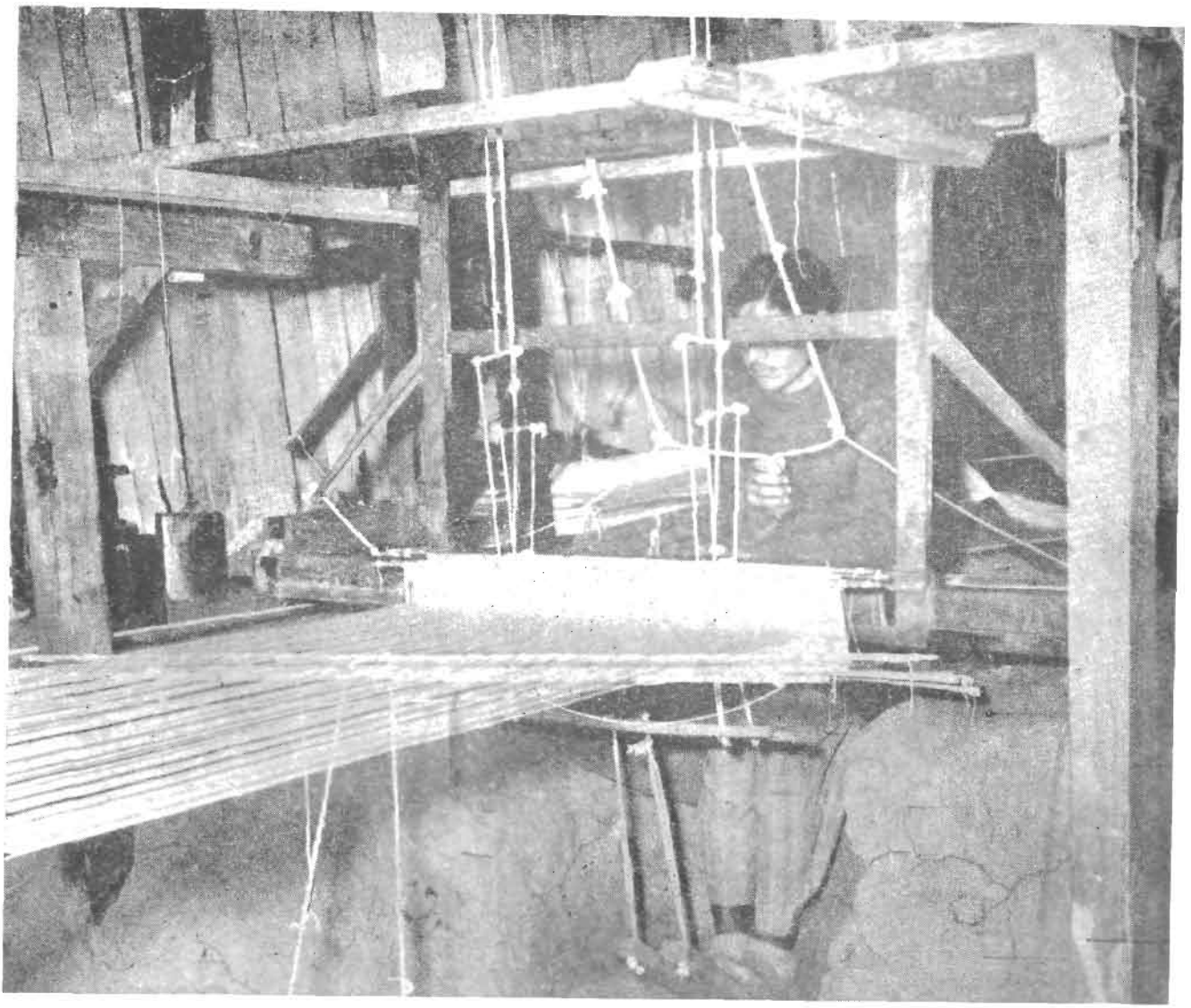
Dressed up loom

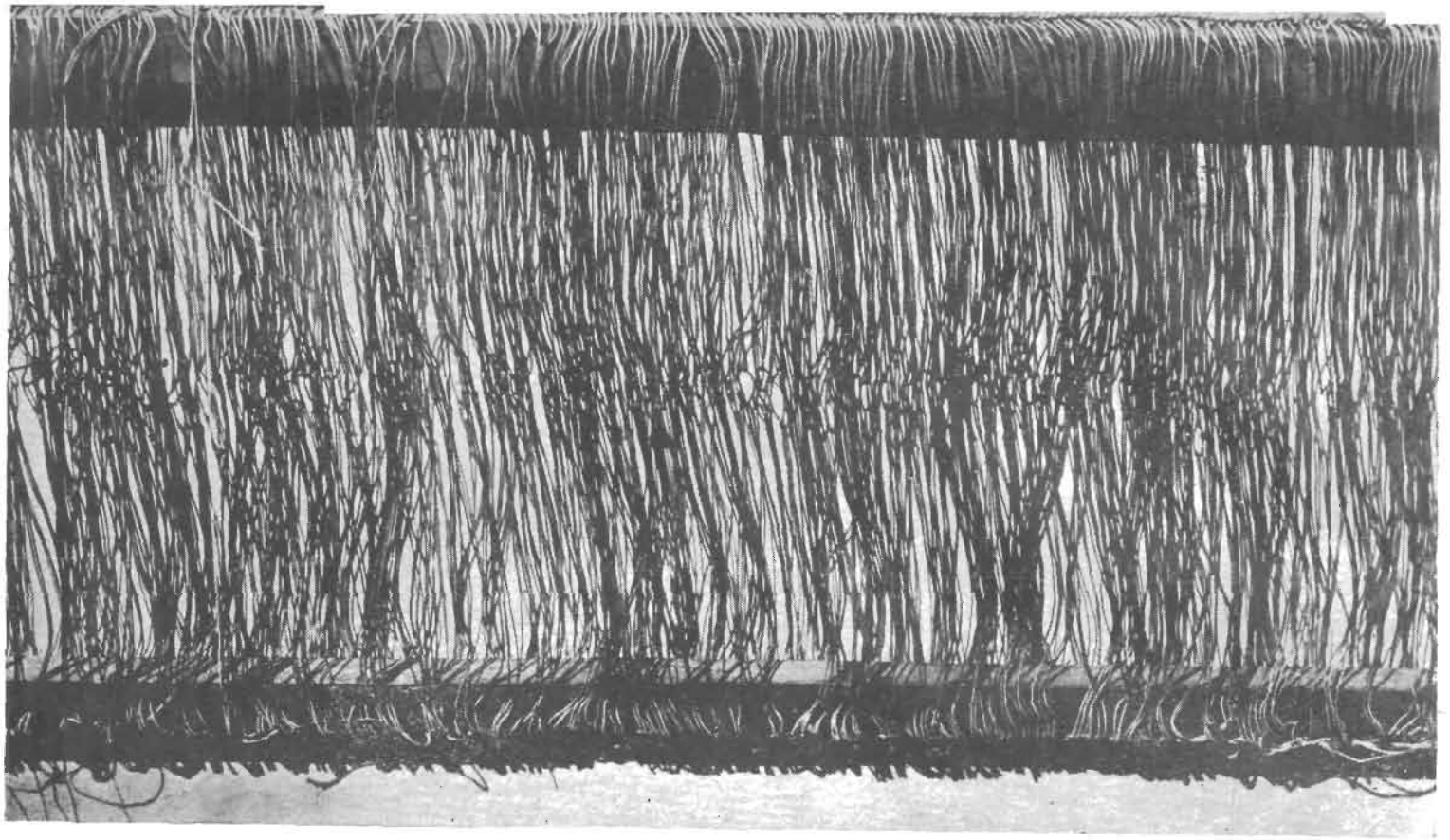


Silk weaving at Mandi→

↓

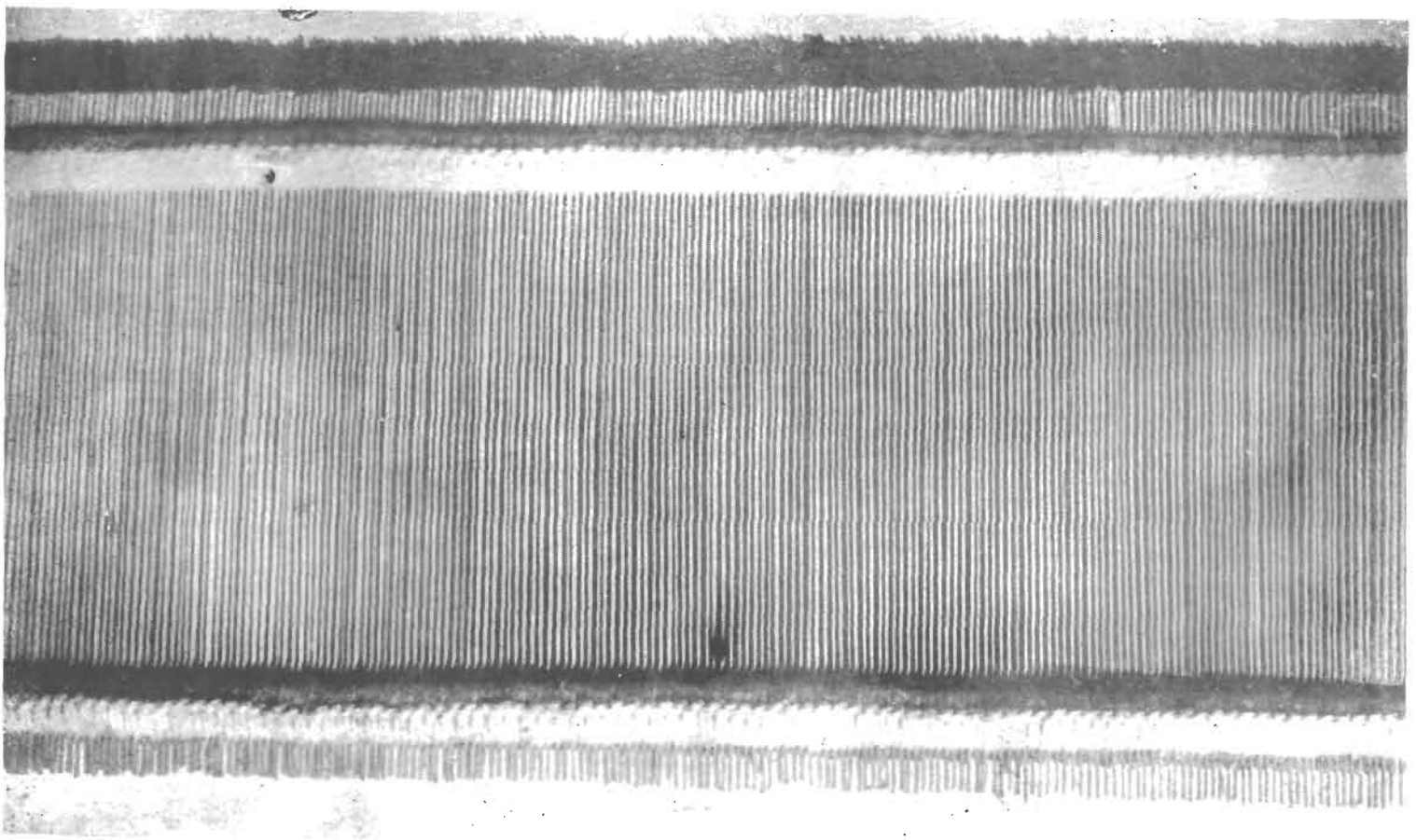


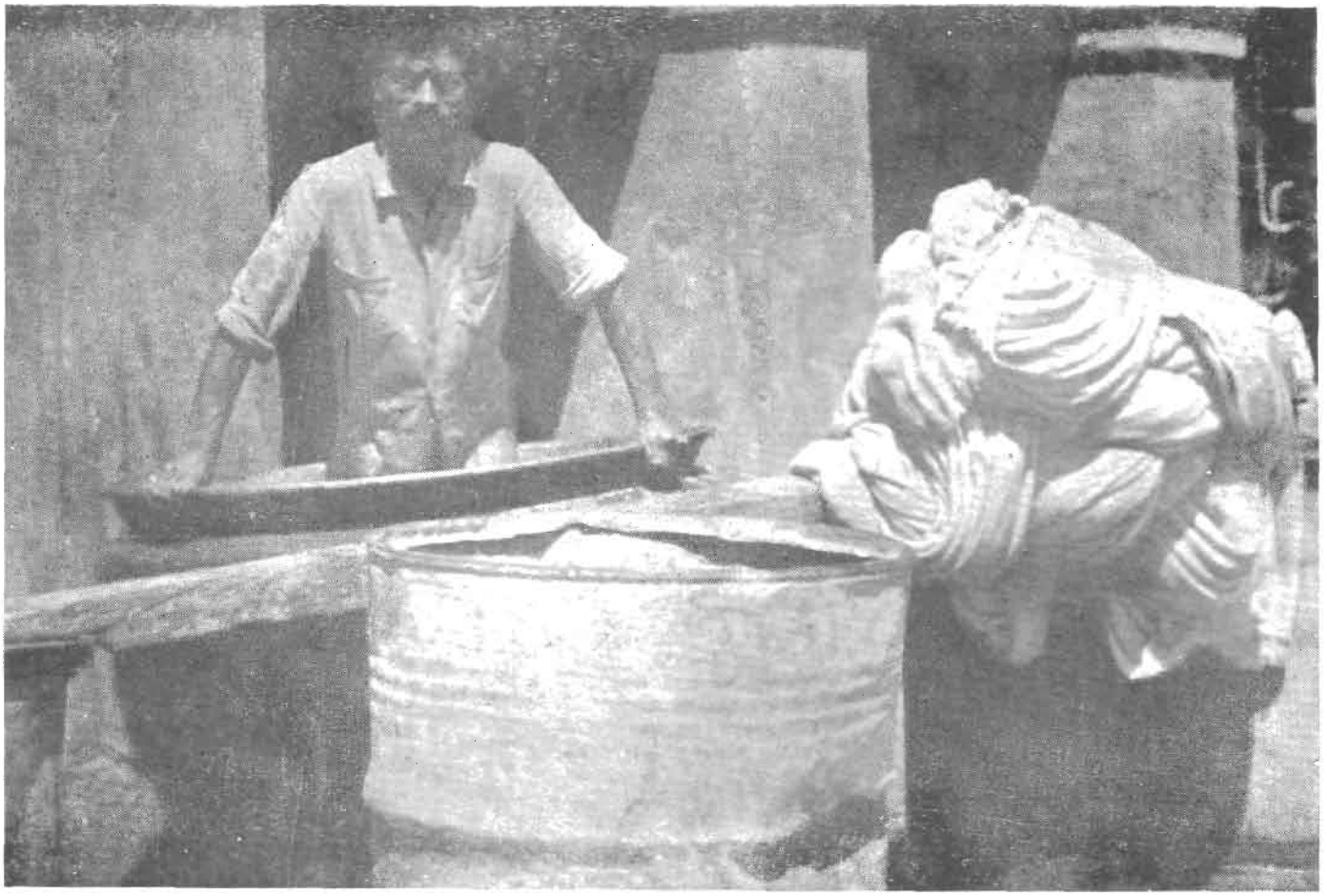




Heddles showing eyelets in the middle

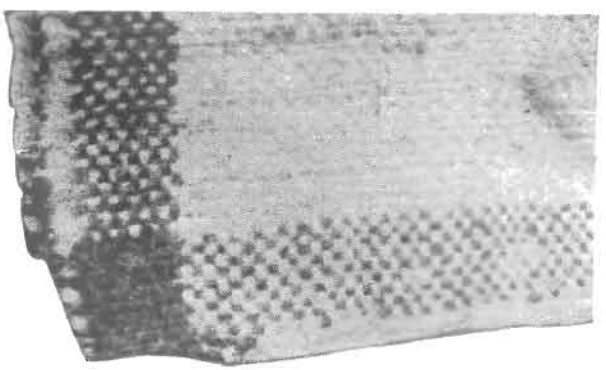
Denting reed



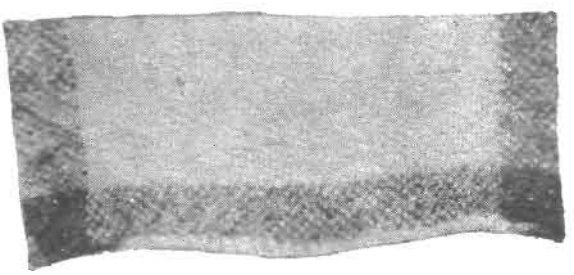


Milling process

A piece of manufactured Kharcha



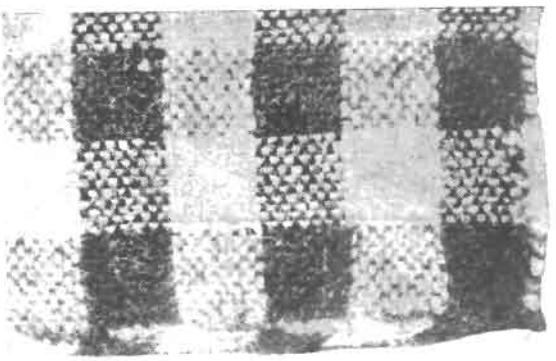
Kharcha made of white goat's hair
with black border

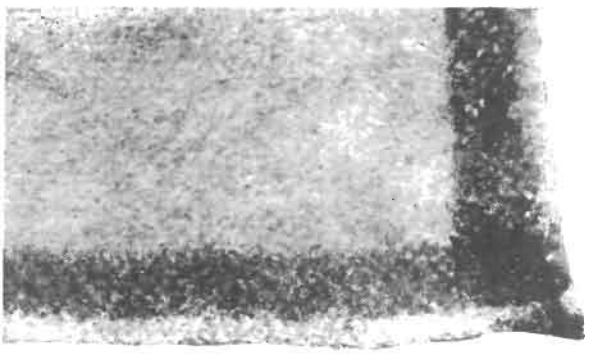




Dressed up loom for kharcha—a goat hair fabrication

Chequered design in kharcha

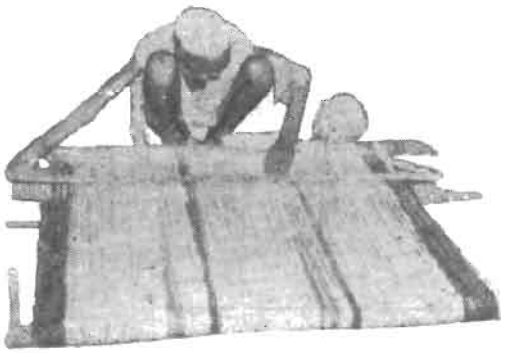




Kharcha made of white goat's hair with black border

Kharcha weaver filling shuttle with weft yarn





An old weaver weaving the kharcha

Kharcha weaving in progress

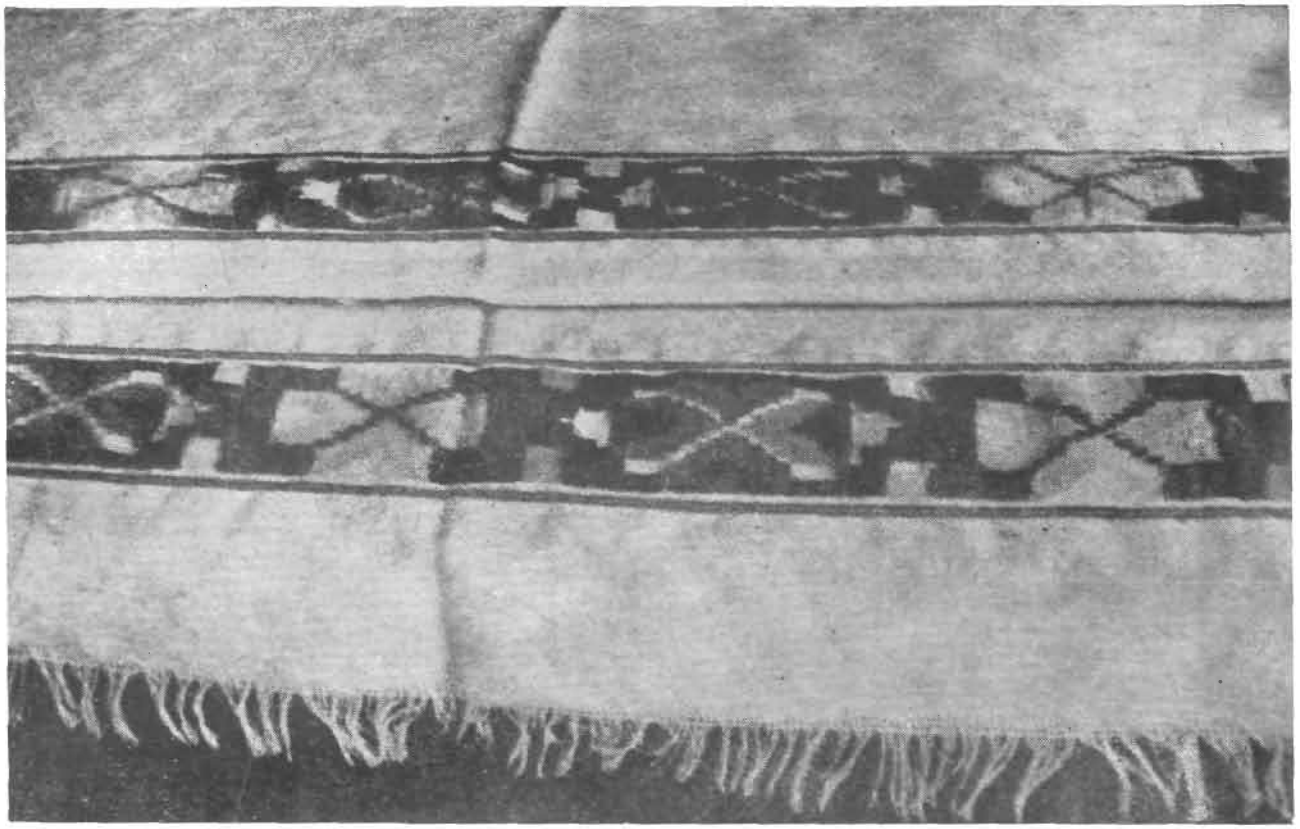




Boat shaped shuttles placed on the cloth

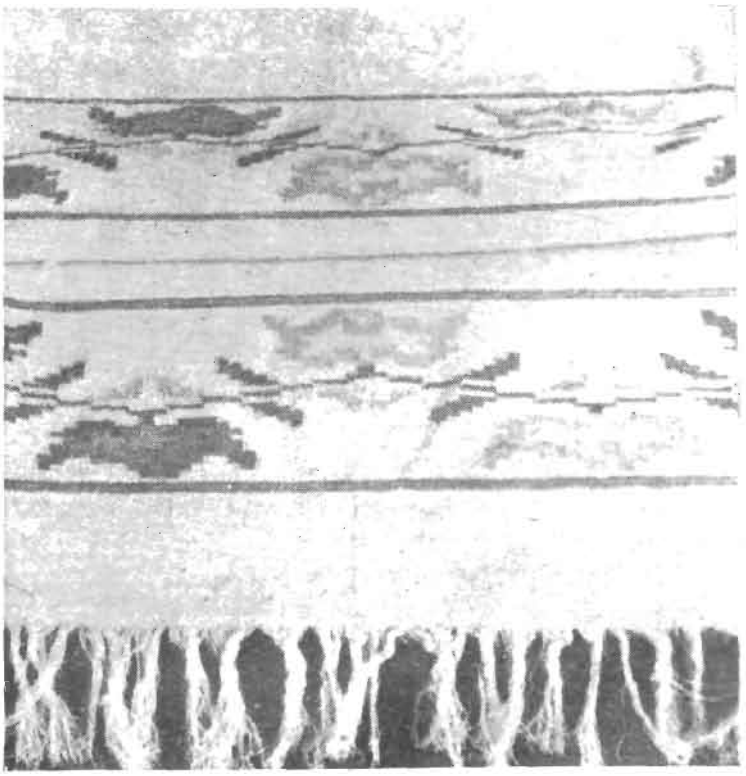
A cap

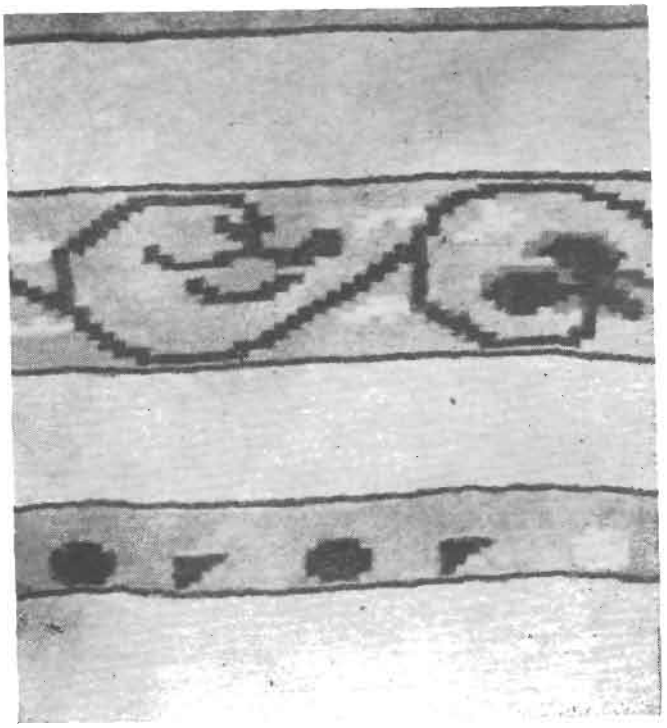




One of the traditional patterns on a shawl

Modern design on a shawl





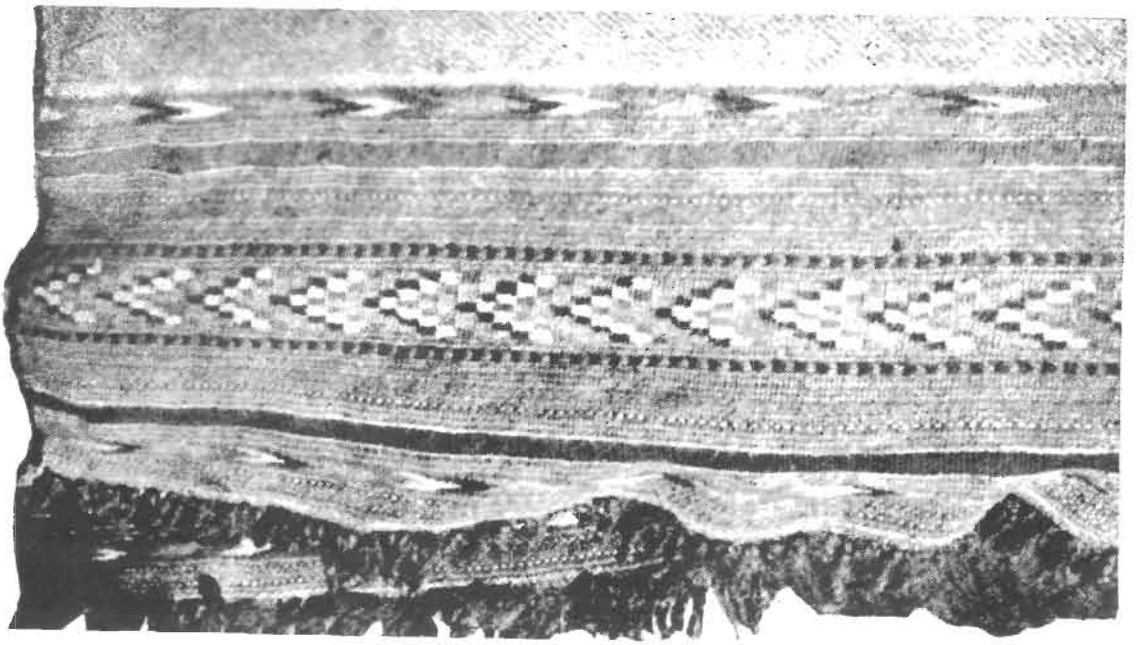
A common design on a shawl

Muffler decorated with traditional designs





Woolen pyjama with traditional pattern

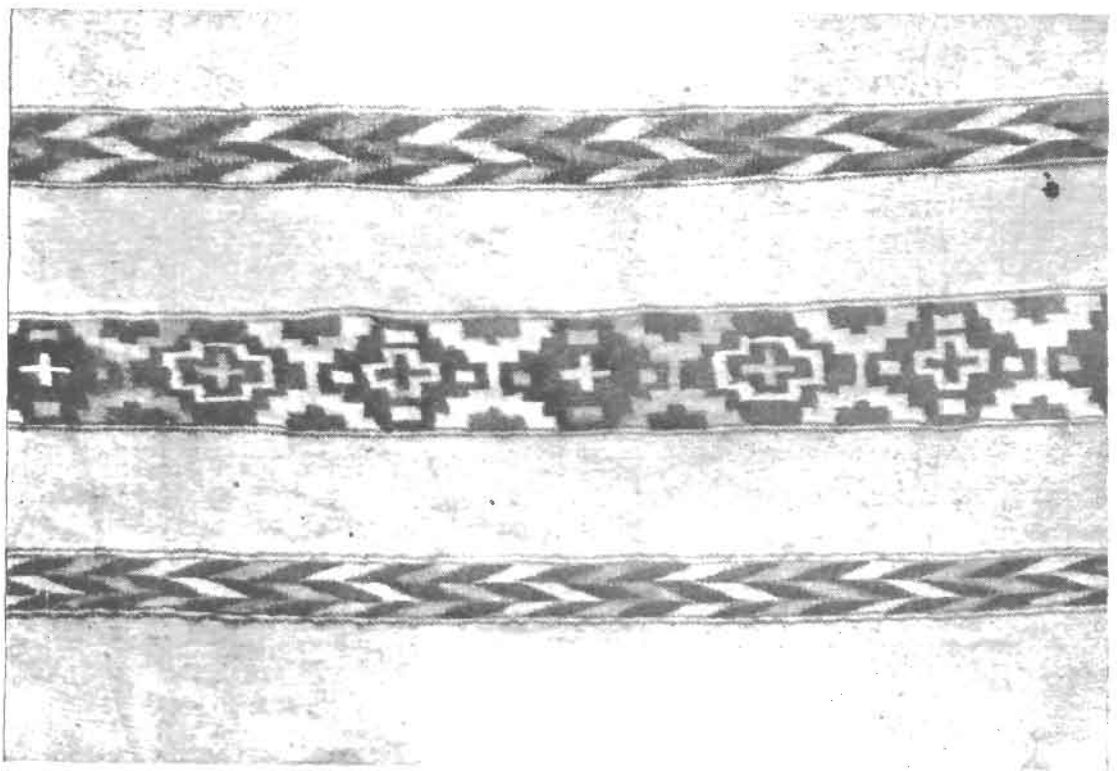


Another shawl design

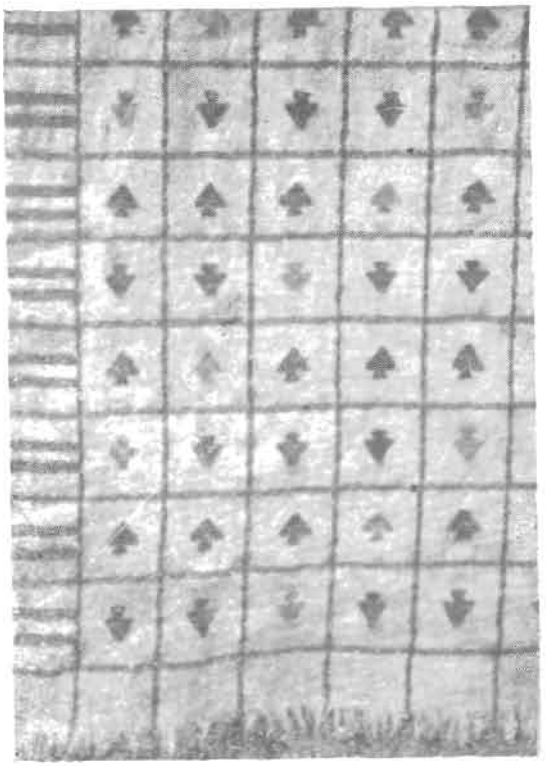


Variety of traditional designs in kinnauri dohroos

A synthesis of modern and traditional designs

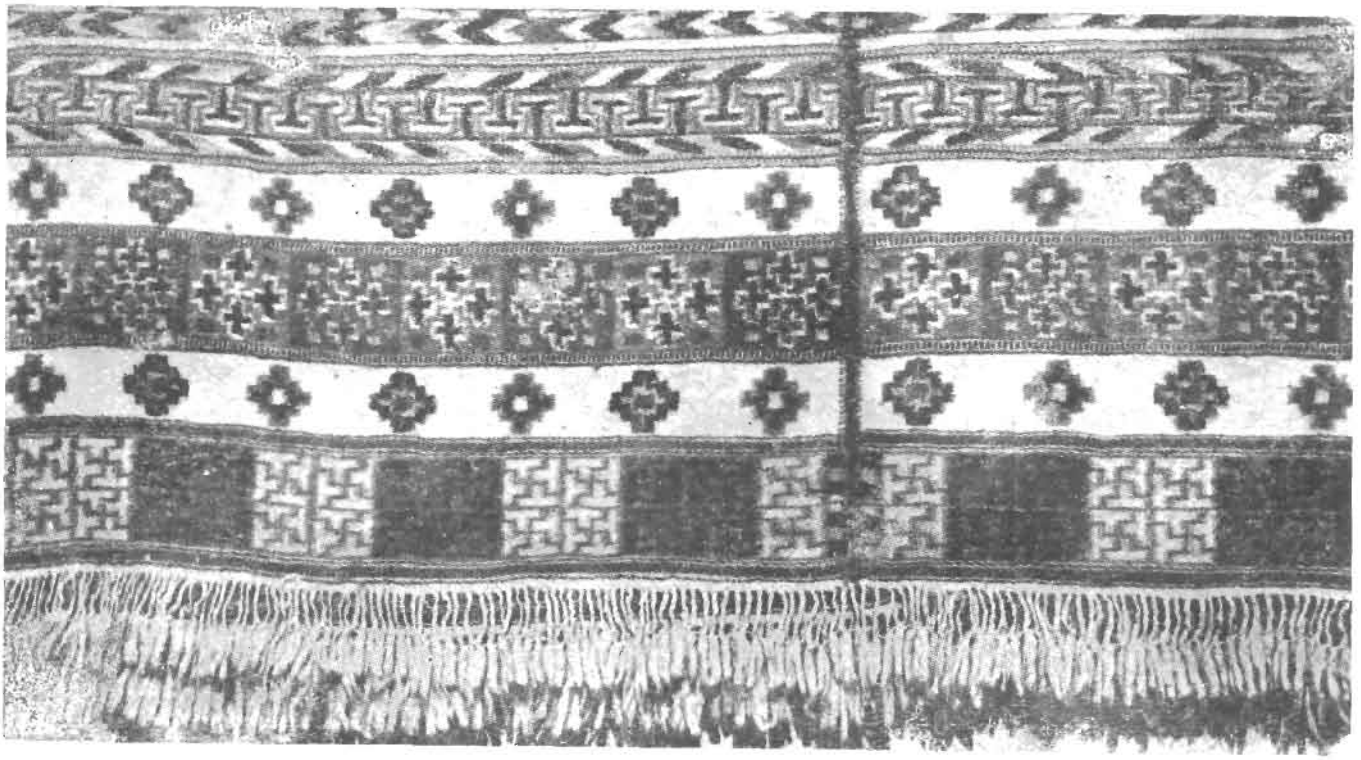


Another shawl design



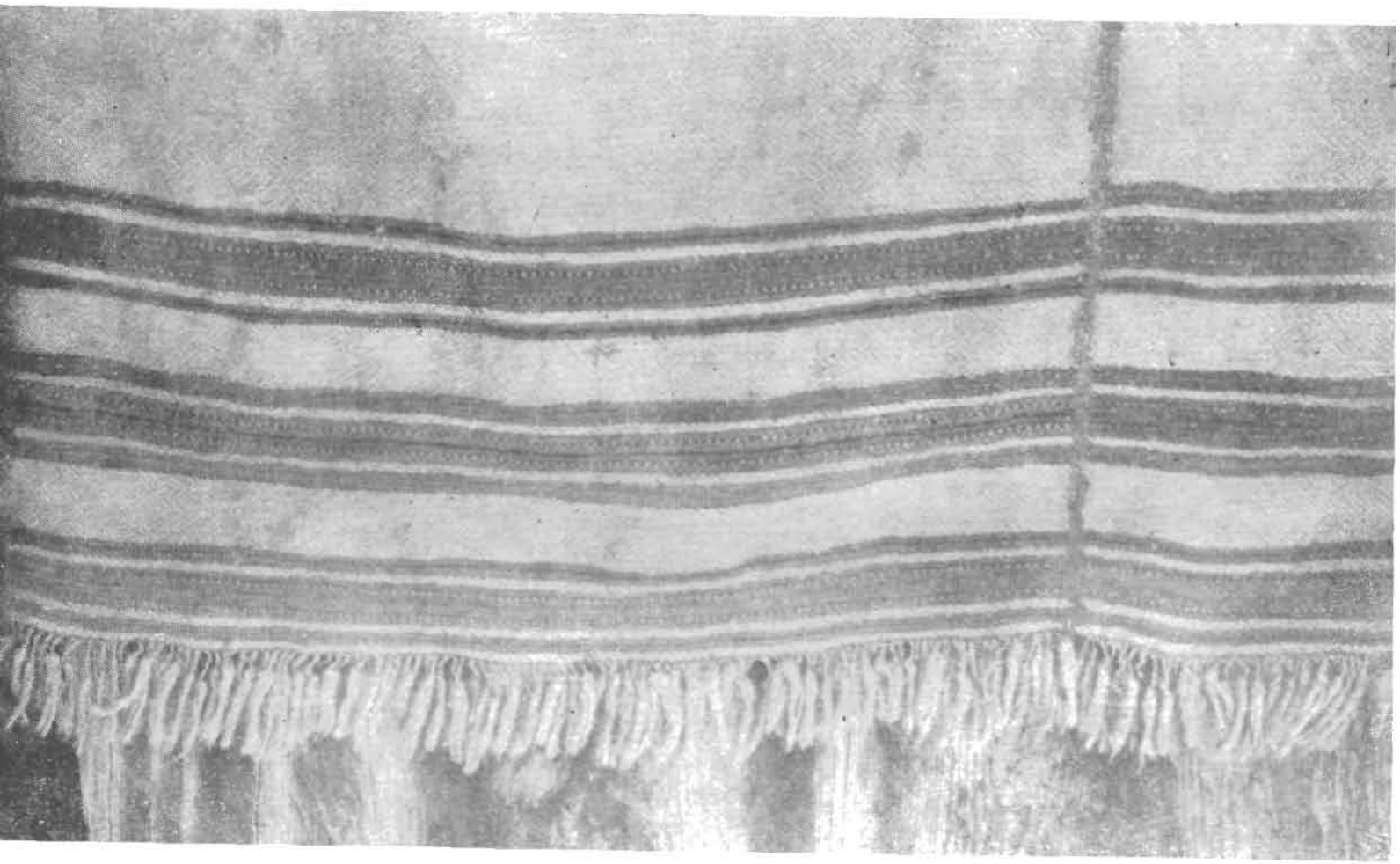
A traditional design on a shawl

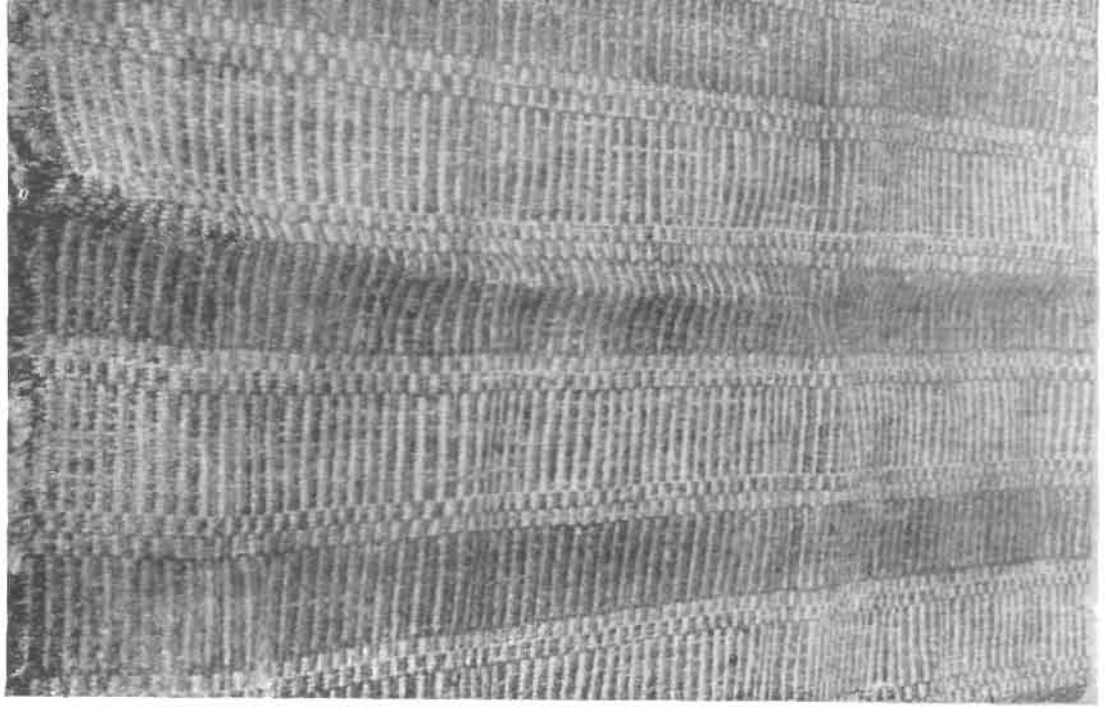




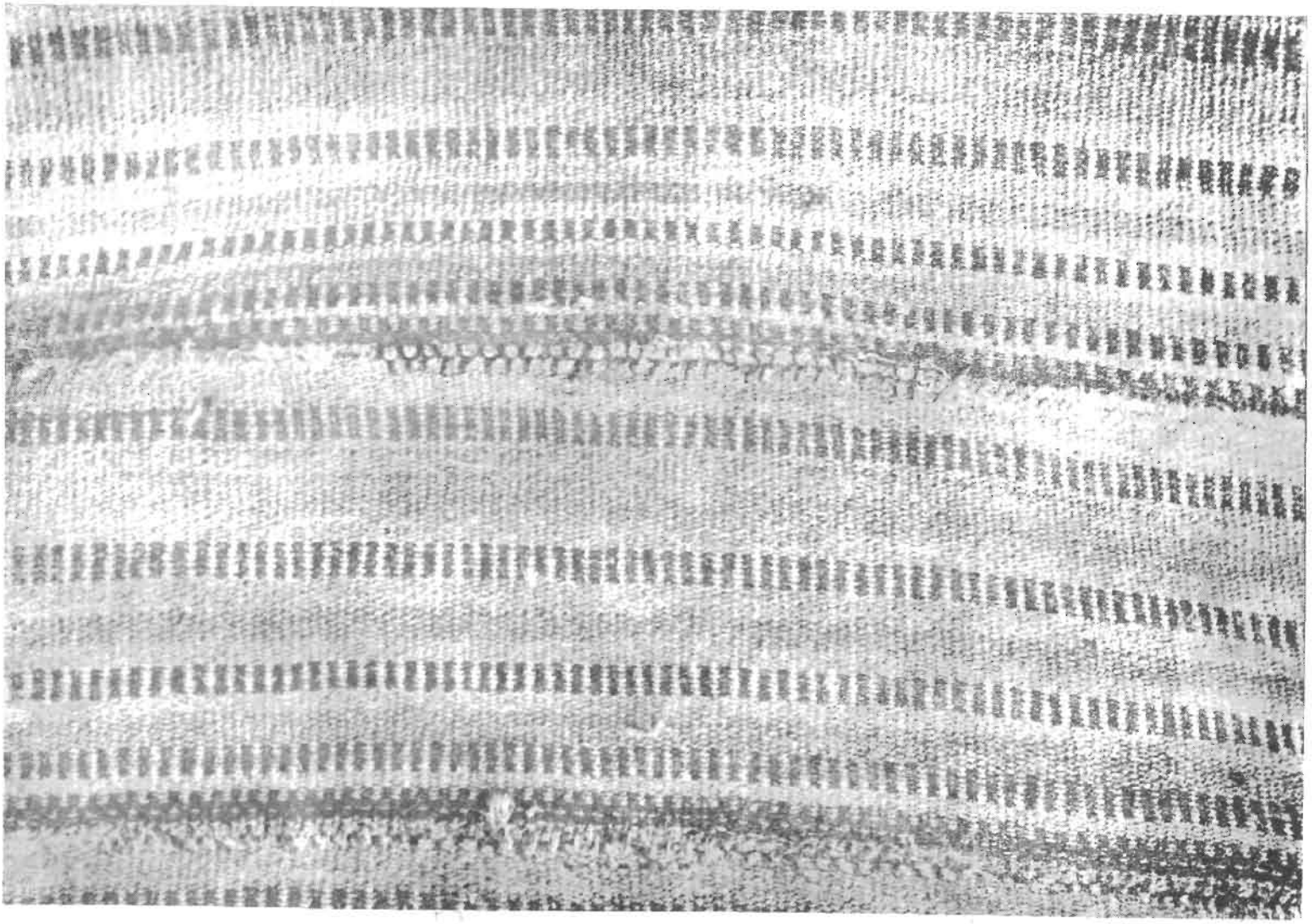
Beautiful shawl designs

A simple dohroo

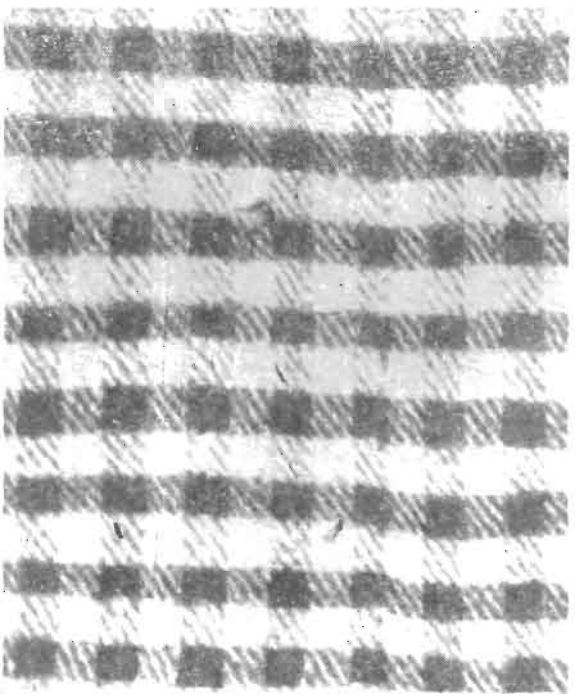




Thobis from Chamba District



Pattu in natural colour of yarn

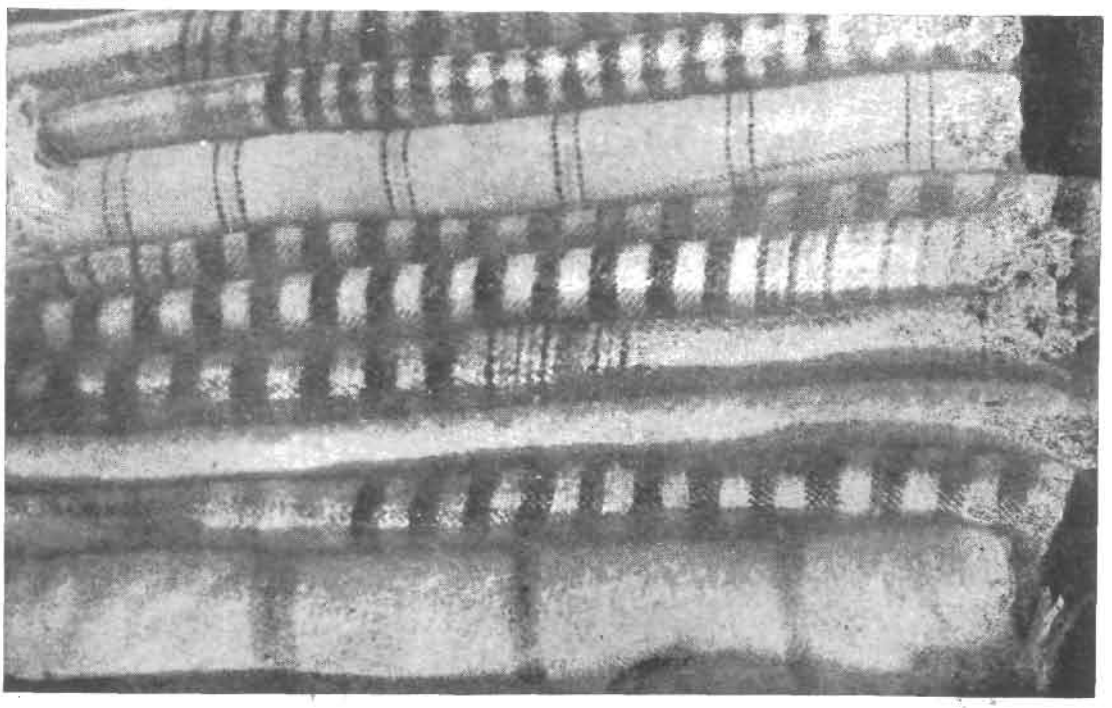


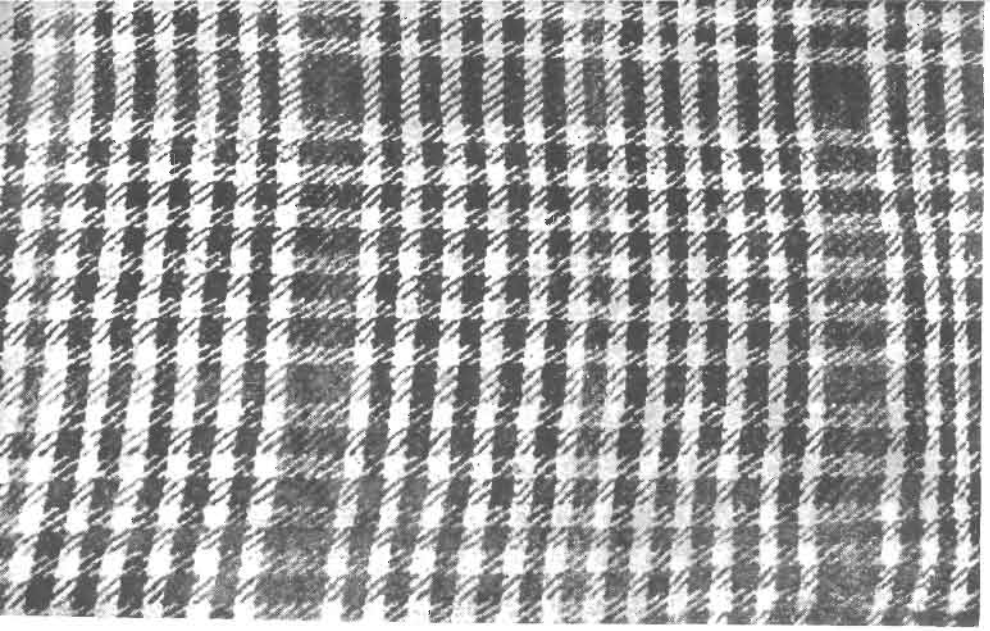
A woollen blanket



Different designs of blanket from Chamba

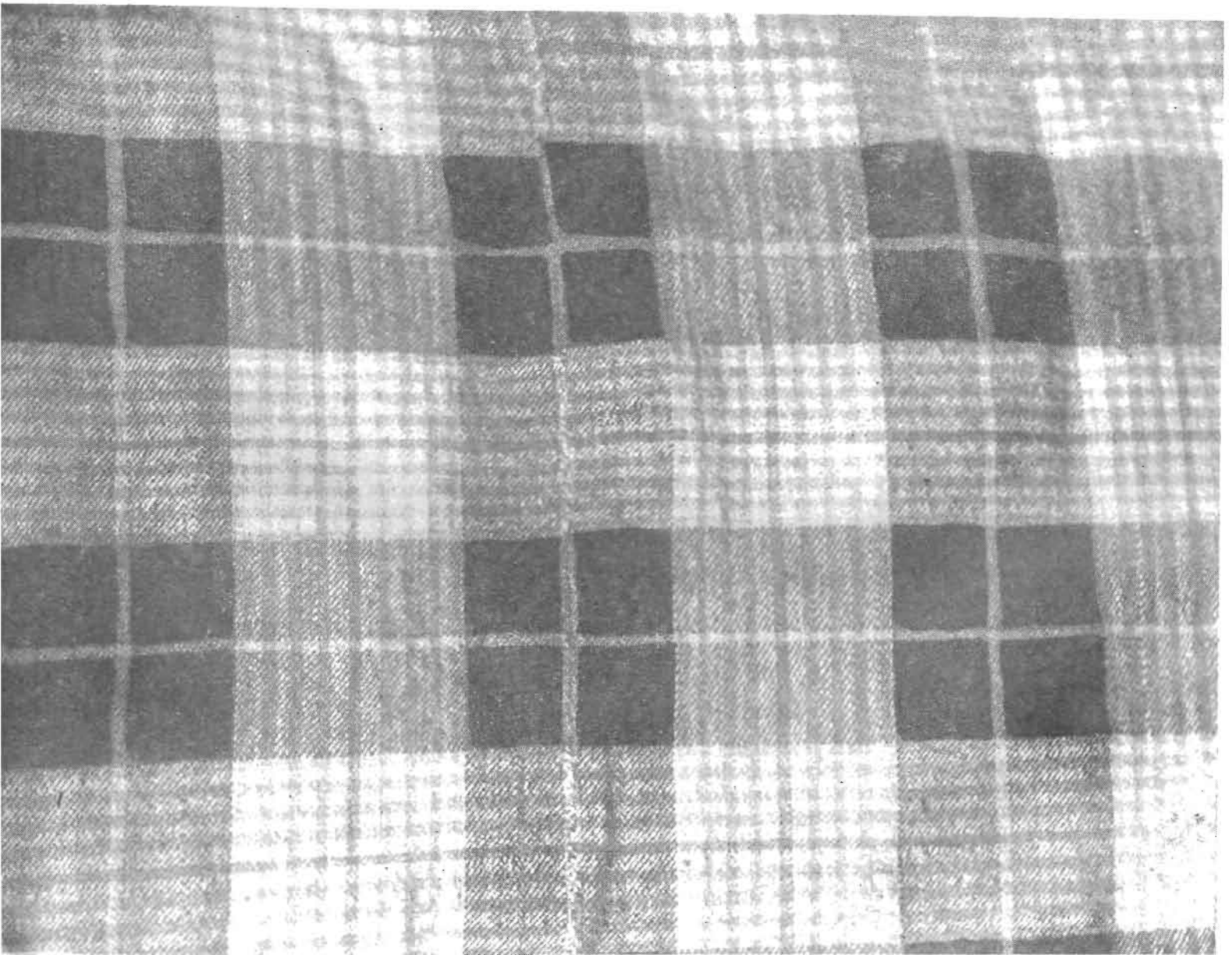
Folded blankets in layers displaying various designs from Chamba



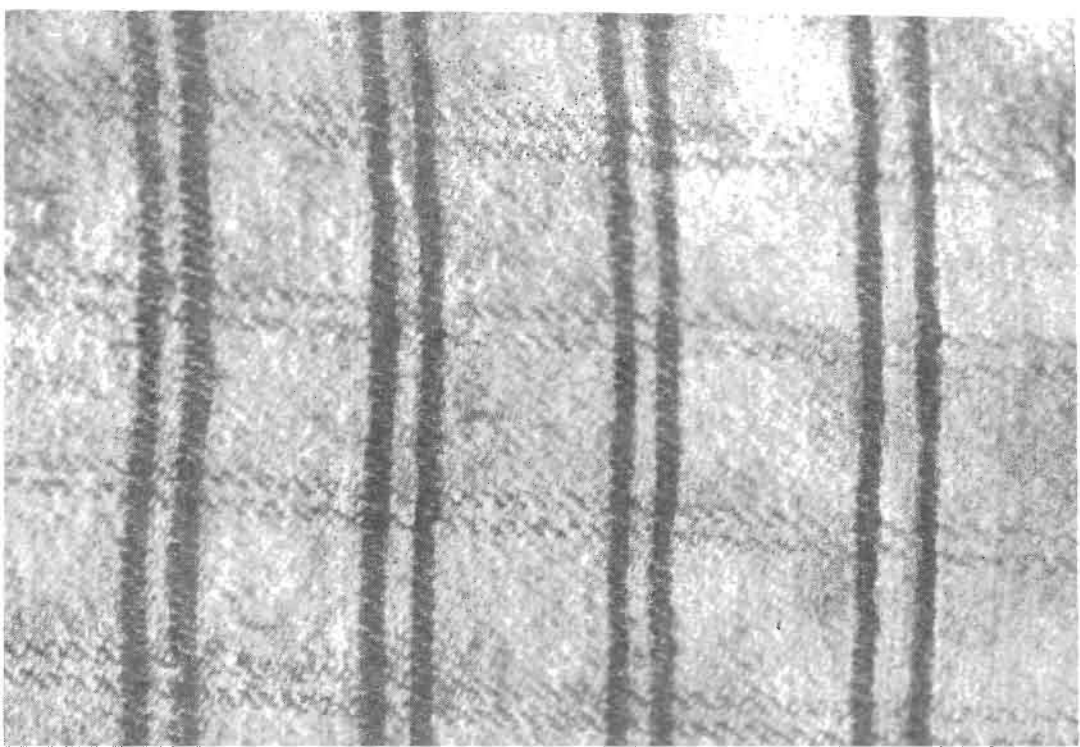


A woollen blanket

A blanket design from kot



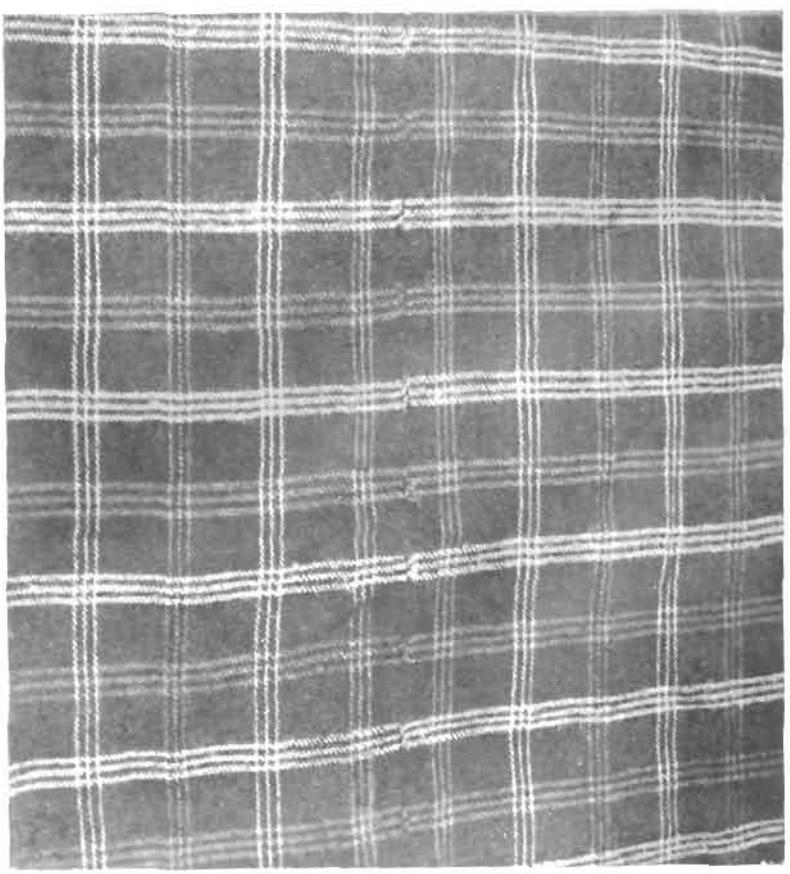
Gordu—a woollen blanket of the gaddis



A common pattern in blankets

A sewn up piece of traditional blanket

A blanket in black and white



Check design



Very skilled weavers who have been doing colour design weaving are almost on the same footings when their wages are reckoned. A weaver could hardly complete two shawls with one yard of rich inlay work on them in one month. Maximum wages that he could claim shall roughly come to Rs. 50.

Whatever may be the income of a weaver, it is their common grouse that they get little in the form of wages. As a matter of fact it is not only a weaver's grouse but the grouse of every one in the present times. In the past weaver's charges were at least six times less than what he charges today. But inspite of comparatively higher earnings he is not pulling on well in these hard days.

APPENDIX I

LIST OF SKILLED WEAVERS

BILASPUR DISTRICT

Bilaspur Sadar Tehsil

Name of Villages	*Name of Craftsmen*
Bilaspur	Avtar Singh
	Bir Singh
	Dayal Singh
	Shree Ram
Ghamarwin	Ganga Singh

Ghamarwin Tehsil

Bam	Ishwar Singh
Barota	Chhitroo
Bhapral	Kirpa Ram
Dadhol kalan	Sadhu Singh
Ghamarwin	Ganga Singh
Kothi	Madu Ram
Rohan	Budhu Ram
Taliana	Tota Ram

CHAMBA DISTRICT

Bhattiyat Tehsil

Chun	Hari Krishan
	Lal Chand
	Rasilo
	Pangu
Kamla	Jalwan
	Shiv Ram
Kuddi	Kirpu

Brahmour Sub-Tehsil

Bajoli	Dhani Ram
	Gulaba Ram
	Jashi Ram
	Mehra Ram
	Prabu Ram
	Tega Ram
	Wazir Chand
Banog	Saraph
Barari	Jagadhar
	Roshan Ram
Bharwali	Bhagat
	Roshan
Chanaota Khas	Chand
	Devia
	Divana
	Koghlia
	Mahajan
	Mogi
	Motti
	Nehala
	Roop Lal
	Roshan
	Ronki
Chobia	Panja
Chuned	Bhima Ram
Deol	Bemhu Ram
	Hirdu Ram
	Jagat Ram
	Surjan Ram
	Tani Ram
Garaunda	Udho Ram
Garehr	Behmi
	Bhandari
	Chonalu
	Chand lal
	Devi Chand
	Dharmu I
	Dharmu II
	Ghamaion
	Gunia
	Gurditta
	Jagata
	Mabhlu
	Machlu
	Mohan
	Nurdoh
	Roffal
	Roshan
	Shaili
	Saili
	Sarof
Gharol	Chand
	Dulu
	Hado
	Jagta

Name of Villages	*Name of Craftsmen*
	Karam Singh
	Kiru
	Makholi
	Ram Singh
	Sanaaru
Grim	Mohan
Gwari	Behmi
	Parma
	Shiama Ram
	Sunkur
Harser	Mongzi
	Mohazan
Khani	Brikmo
	Neroo
Khund	Gargu
	Raju
	Suria Ram
Kuarsi	Balu
	Jagta
	Lakha Ram
	Nathu
Kuleth	Bhagat Ram
	Dhania Ram
	Palsu Ram
	Sankhu Ram
Lamu	Bayagu
	Rod Dass
Mahun	Prithi Singh
Mando	Abtu
Marhauta	Brhom Ram
	Dhari
	Dumnu Ram
Naya Graon	Akul Singh
	Ashiuma Ram
	Skhia Ram
Palan Palani	Buta
	Dino
	Dyal
	Handu
	Jassaul
	Khaidu
	Makholi
	Pahlad
	Phulagri
	Ronki
	Ratnu
	Thifu
	Thunia
Palda	Budhi Singh

Name of Villages	*Name of Craftsmen*
	Mina Ram
	Mushafar
Pangsei	Behmi
	Bindu
	Busakhi
	Chamaru
	Chattro
	Dashaul
	Digti
	Dumunu
	Dwana
	Dyal
	Galaba
	Hira Lal
	Jaimal
	Jalam
	Khazana
	Makholi
	Mohan
	Nihala
	Parm
	Prhlad
	Prithi Chand
	Puran
	Ram Ditta
	Pavan
	Sankhu
	Sorma
	Taru Chand
Rajaur	Jaishi
Sulakhra	Digtti
	Kneth
	Mehtu
Sutkar	Godham
Thane-Tar	Arjun Singh
	Soni Ram
Ulans	Digtti
	Dittu
	Fanau
	Mauji
	Mhant
	Ram Saran
Uparli Kugti	Bishan
	Dumnu

Chamba-Tehsil

Baroli	Gunia
	Prarungla
Baror	Budhia
Bhanauta	Jamtu

Name of Villages	*Name of Craftsmen*
Chamba	Basant Lal
	Chuni Lal
	Chaman Lal
	Devi Prashad
	Geetu Devi
	Hardei Devi
	Hesri Devi
	Hintoo
	Jai Ram
	Jai Ram Chand
	Munshi Ram
	Parkasho Devi
	Rankoo Devi
	Rattan Chand
	Rosho Devi
Dramman	Bhago
Dulara	Bhikhi
Haripur	Jittu
	Hari Dass
	Gorakh
	Madho
Kaiga	Damoder
	Soli
Karor	Damoder
	Rajmal
Khajiar	Banko
	Devi Prasad
	Manshu Ram
	Narain
Luni	Birju
	Dalela
Muhal	Hari Sukh
Nandrela	Budhia
	Chanaia
	Dhanu
	Harua
	Kharku
	Taklu
Parongal	Dina
Pukhri	Hoshiara
Seru	Dikti
Thundu	Chattro
Tikri	Archu
	Telia

Chaurah Tehsil

Atoga	Bhatt
	Hari Dass
Banaota	Dasrawan
	Dinnu
Barangal	Jiveri
	Shero
Bari	Naresh
	Negi
	Sahlu
Bharaila	Rama
Bharara	Giano
	Sukh Dev
Bhauga	Bhima
	Bhoia
	Budhia
	Doel
	Madho
Chanan	Dharma
	Konthu
Chhajaut	Hari Dass
	Jogram
Chhudra	Mussodi
	Pathonia
Dhanabal	Kanshi
	Roshan
Dhaneli	Jessu
	Sagar
Dhar	Chura
	Devia
Dughli	Budhia
Gadiog	Chand
	Dittu
	Fatela
Garh	Arju
	Bhikkam
	Chatra
	Dara
	Kabli
	Kesar
	Locha
	Rup
Guddan	Bhagi
	Marsh
	Singh
Gwar	Bishen
	Dai Dayal
	Kidara
	Nihalu
Hadila	Hukkam Chand

Name of Villages	*Name of Craftsmen*
Hartwas	Chet Ram
	Ludder
	Prem Singh
Jasaur Garh	Lohnu
	Mthu
Jhaj Kothi	Puran
Junth	Jatta
	Negi
	Ram
Kethili	Alam
	Luddar
Khilgraon	Sawan
Kumarka	Bhangala
	Dalia
	Nichala
Kundi	Bhogi Ram
	Bazeera
	Mohana
	Teju
Lohani	Paras Ram
	Raju
	Teju
Mansa	Arjan
	Dharam Singh
	Diala
	Mangorthu
	Parshotam
Motiund	Atra
	Dan
	Pam Dayal
	Sonam
Nagor	Doom
	Keshi
	Nand Lal
	Negi
Rundal	Jag Ram
Sai	Bhagi
	Jamohar
	Parma
Salori	Moti
Saprot	Bhima
	Jai Dyal
	Jotia
	Moti Ram
	Nandu
	Negi
	Puran
	Ram Dayal
Saroga	Santu
Sathias	Alam
Ser	Changa
Shagla	Amar Chand
	Dhania Ram
Shalla	Bhagana
Shali	Paras Ram
Sunj	Dasrawan
	Mussodi Ram
Talai	Barfi
	Musaddi
Thanai Kothi	Aziz
	Dass

Pangi Sub-Tehsil

Chiloli	Sanam Guru
	Sarvan
Dharwas	Rattan Chand
Gangit	Shiv Lal
Hilaur	Deldev
	Kertanj
Jhalwas	Mohan Lal
	Suba
Karel	Dhenpat
Kutah	Jagdev
	Kanthen
	Sujana
Luj	Bhagatu
	Budhu
Malet	Ram Dyal
	Ram Krishan
	Hari Chand
Micham	Puran Dass
Pargwal	Sarlut
Rusmas	Nanak Chand
Saichu	Mani Saran
Salpat	Jila Ram
Seri	Rama Nand
Shun	Bans Ram
	Jai Chand
Tai	Bhagat Ram
	Ram Saran
Takwas	Budhi Ram
Tuan	Dharam Chand

Name of Villages	*Name of Craftsmen*
Tundru	Bhag Singh
Udaipur	Chet Ram
Udin	Ser Chand
	Suraj Ram

KINNAUR DISTRICT

Kalpa Sub-Division

Chasu	Chering Deub
Kalpa	Charan Sukh
	Chhedub
Kamru	Nargu
	Ram Dass
Khangi	Jial Sukh
Koti	Nargial
Miru	Bhaginar
	Bhogi
	Narjeu
	Prabhu Lal
	Sangaya Sukh
	Shiam Sukh
	Targaya
Poari-Tangling	Jiwan Dass
Rogi	Ratti Ram
Sangla	Dilbar
	Narayan Sukh
Shong	Shorpur

Embroidery on Pattus & Darees

Barua	Sangya Sukh
	Sewa Sukh
	Shan Pur
	Shiam Chand
Duni	Sewa Ram
Kalpa	Charan Sukh
	Chhedub
	Chheringpat
	Chhewang Darje
	Chhinet
	Thaierchlan
Koti	Bhajjoo
	Krishan Lal
	Nargyal
	Purshotam
Purbani	Ringzin dule
Poori	Chhaspat
	Hywaub Dass
	Narpat

Name of Villages	*Name of Craftsmen*
Rogi	Ratti Ram
Sapni	Sukh Lal

Nachar Sub-Division

Bara	Bhaginar
	Churua
	Gian Sukh
	Longu Ram
	Madan
	Mangal
	Nakal Sukh
	Nar Dass
	Pati Ram
	Palam Sukh
	Ram Chua
	Sanam Chharing
	Tilkua
	Zar Dass
Bara Kamba	Horkua
	Joli
	Jnua
	Knayinu
	Meny
	Nakal
Chango	Bir Sukh
	Bhagi Ram
	Chetua
	Chhotra
	Darjedua
	Dharam Sukh
	Irkhua
	Jawala Sukh
	Kameta
	Katkua
	Labzang
	Malo
	Mal Sukh
	Mangher
	Minguza
	Nargua
	Narjipur
	Nargawa
	Perma Nand
	Ramba
	Ram Chand
	Sonam Giachho
	Saten
	Tabgiaso
	Tarshi
	Zero
Chargaon	Bhogi Nar

Name of Villages	*Name of Craftsmen*
	Biss Khuwa
	Bor Sukh
	Churan Dass
	Chhakbar
	Chharing Datt
	Chhosukh
	Datta
	Dhankua
	Feo
	Ganga Ram
	Gopi Chand
	Helan Sukh
	Inder Singh
	Jeet Ram
	Jeonar
	Joti Sukh
	Kalam Sukh
	Kali Dass
	Kurta
	Lachhi
	Nardan
	Ram Chuwa
	Ram Chand
	Ram Dhan
	Sanpur
	Sukh Nar
	Uttam Sain
Chora	Barestua
	Choptua
	Daub
	Her Dass
	Nar Dass
	Seu
	Siakrua
	Sikrua
Chhota Kamba	Lehnua
	Narsing
	Phangnu
Jani	Balbhadru Singh
	Gian Rattan
	Hirpal Singh
	Maya Jene
	Yangdar
Kangos	Gian Sukh & Klus
Nachar	Bara
	Bhagat Ram
	Chenua
	Chhagjeu
	Chharingial
	Dalue
	Dhanpur
	Jenu
	Kiltuso
	Kersua
	Lukhi
	Mirua
	Nar Dass
	Nargu
	Shiam Sukh
	Sonpur
	Sukh Jeo
	Tokua
Natpa	Bhag Chand
	Chhander Sukh
	Chhogyal
	Jethua
	Jitu
	Kiblua
	Lachhmab
	Lal Sukh
	Narjewa
	Narpal
	Narsia
	Ram Sukh
	Zidi Sukh
Panwi	Bareshtu
	Narper
	Shoru Ram
Punang	Hir Sukh
	Jita Pur
Ramni	Amar Sukh
	Ban Kuwa
	Chharing Ram
	Churu
	Jidhu
	Jobi Ram
	Kahi
	Manu
	Chambe
	Dilsukh
	Muni Lal
	Nar Dass
	Pal Sukh
	Panchi Lal
	Payare Lal
	Sher Singh
	Zeo Lakh
Rupi	Amar Sukh
	Ban Kuwa
	Chharing Ram
	Churu
	Jidhu

Name of Villages	*Name of Craftsmen*
	Jobi Ram
	Kahi
	Manu
	Maya Dass
	Nikala Dass
	Ram Sain
	Sar Dass
	Tonke
Sungra	Katkua
	Sarjua
Taranda	Gian Sukh
	Gial Dass
	Gogia
	Harjua
	Hisrua
	Jamlua
	Majua
	Nankua
	Palkua
	Rabia
Poo Sub-Division	
Asrang	Gopi Chand
	Kanshi Ram
	Labzang
	Lachmi Zor
	Nar Chhering
	Udham Dass
	Chhotra
Chango	Dareje Dua
	Kanta
	Kameta
	Labjang
	Landup Ram
	Minguzra
	Nargtava
	Parma Nand
	Rambir
	Ram Chand
	Sanamgialcho
	Talegiava
Dabling	Chhering Chopel
	Chhering Darje
	Dewa Jangino
	Gulab Singh
	Jamba Ram
	Kuluram
	Kudar Singh
	Nangial Darje
Giabong	Agar Dass
	Chanderpur

Name of Villages	*Name of Craftsmen*
	Chhering Natap
	Chhering Zor
	Chhering
	Chhetan Chhopel
	Dania Ram
	Dewa Chhering
	Devi Singh & Ganga Ram
	Khuzang & Mandev Ram
	Ramjit & Ram Singh
	Thachung
Jangi	Ghhering Pat
	Dandup Darje
	Dachan Dandup
	Dau Ram
	Dharam Sain
	Dewa Jeet
	Giachho
	Jamble
	Moti Ram
	Madup
	Nardup
	Nima Nardup
	Palkes
	Panna Dandu
	Dangtak Darje
	Shyam Dass
Kanum	Chhering Darje
	Chhering Dandub
	Chhering Ram
	Dev Sukh
	Hera Chhering
	Hiran Jeet
	Santu
	Senam Dandub
	Siram Dass
	Sevean Ringchin
	Sharb Mendup
	Sonam Paul
	Tharchand Darje
Labrang	Dandup Chhering
	Darje Chhering
	Dewa
	Dewa Chhering
	Dorme
	Gulbas
	Hisha
	Namta Jeet
	Pottam
	Padme
	Ram Chand
	Santa Darje
	Ziddu

Name of Villages	*Name of Craftsmen*
Morang	Bhagat Dass
	Bhag Chand
	Chhering
	Chhetandup
	Daya Nand
	Gopi Chand
	Gian Chand
	Hira Lal
	Hir Chand
	Nandup Chhering
	Rattan Dass
	Sanam Chhering
	Sham Lal
	Sona Pur
	Sharp Jin
	Sonam Dandup
	Sonam Tub
	Tanjindup
	Udham Sukh
	Yangchan Singh
	Zabar Sukh
Namgia	Angdon
	Dandhua
	Guachho
	Koli Tran
	Tashi
	Zangbo Ram
Pilu	Bhagsain
	Chhering Palzor
	Dandup Chhrering
	Kaldan Sukh
	Sanam Jeet
	Sharpzangbo
	Tanjingiolchhan
	Yangchandandup
Poo	Chhering
	Chhering Namgial
	Chotu Ram
	Dandup
	Dandupwa
	Kulu Ram
	Labjang
	Minguza
	Nargiana
	Narphela
	Ram Chand
	Ringzin Zagmo
	Sonam Jeet
	Thanzung Zor
	Thachhing Chhering
	Yagdupwa

Name of Villages	*Name of Craftsmen*
Rarang	Dharm Dass
	Lachman Dass
	Mila Ram
	Prem Chand
	Sukh Lal
Ribba	Amer Dass
	Anar Den
	Bhagat Ram
	Bhog Zore
	Bias Nand
	Bishan Bhagat
	Chheda Sen
	Darje
	Dharm Pur
	Dharam Zore
	Galju
	Gang Sukh
	Jaisi Lal
	Jeet Ram
	Kedar Dass
	Maljeet
	Man Sukh
	Nauti
	Nimamdup
	Shanker Dass
	Sukh Dass
	Shan Sukh
	Sharam Bhagat
	Sonam Gial
	Umar Dass
	Umazou
	Zaban
Rispa	Chhering Dandup
	Har Chand
	Inder Sukh
	Nargadup
	Nardup
	Narpat
	Yan Sukh
	Zatu
Ropa	Bidi
	Chozin
	Chhering
	Dewai
	Dewa Chhering
	Dewai
	Dharam Singh
	Nima Chhering
	Ram Singh
	Rawan
	Sada Ram
	Sanam

Name of Villages	*Name of Craftsmen*
	Saeaur
	Tashi Chhering
	Tunzing
	Tunzin Medup
	Uma Bhat
	Urgian
	Wangial
Rushkling	Akal Chand
	Akal Jeet
	Chhering
	Chhering Jeet
	Chhering Narboo
	Dandup
	Furboo
	Gialchhan
	Hiradan
	Gialu Khaba
	Khirrya
	Lukpa
	Mancual
	Mangal
	Narboo
	Nimagialchhan
	Taunbai
	Tulshi
	Toshi Dandup
	Uma Sukh
	Yandak
Shiasu	Dub
	Ragha Dass
	Urgian Medup
Sumrah	Chhunumba
	Darje Medup
	Gialcho
	Sunam Phinchuk
Sunam	Chhering Choppel
	Chhetan
	Chhewang Darje
	Chhodip-Darje Dandup
	Dewa Gialchhan
	Dorgial
	Gialchhan
	Hirapur
	Inder Medup
	Kali Sharma
	Nima
	Namgial
	Ram Chhering
	Ranba Medup
	Uda
Thangi	*Chhering Zor*
	Bhangu
	Budhju
	Dewa Sukh
	Dharem Jeet
	Hetan
	Hirabag
	Jhani Sukh
	Moghu Ram
	Nar Sukh
	Nubha
	Sanam Zor
	Uma Sukh

MAHASU DISTRICT

Arki-Tehsil

Bedavni Denehar	Ratan Chand
Dadal	Dewan
Darla	Dhani Ram
Daseran Bala	*Daya Nand*
	Lachu
Ikva Brahmanan	Moti
Jaghun	Kishu
Kalar	Jeonu
Kothi	Daya Ram
	Mast Ram
Majhiat	Nand Lal
Sehrol	Nant Ram
Sarianj	Sant Ram
Sosai	Sees Ram
Surajpur	Seo Ram
Sychwah	Devi Ram
	Bhagat Ram

Chupal-Tehsil

Baghar	Jhasa
	Mangni
	Thebu
Bamta	Adia
	Jeai
Batewri	Baria
Hira	Devnu
	Hishru
	Meru
	Pirmu
	Relu
	Torsia
Jualnu	Julia

Name of Villages	*Name of Craftsmen*
Khadar	Gora
	Motia
Kotangu	Tinya
Lingzar	Kinta
Mandoli	Titoo
	Thisu
Naoni	Kumnu
Nar	Sagh Chand
	Mamsisth
Puiari	Kalia
	Khanpur
	Pelus
	Thalu
Rinjat	Jeai
Sarkali	Kannia
Saran	Pounu
Thiara	Mohia
Tikri	Bhaji
	Keshu
Jubbal-Tehsil	
Sitandli	Thalla
Sundli	Mai Dass
Kasumpti-Tehsil	
Kasumpti	Daulet Ram
	Ganga Ram
	Jeonu
	Krishn Lal
	Puranjor
Tikar	Munnu
Rampur-Tehsil	
Easa Bani	Janglu Ram
Bashara	Sidhu Ram
Bhali	Daulat Ram
Danawati	Mathar
Dansa	Sangtu Ram
Deothi	Bali Ram
	Himtu
Ganwi	Sabarnu
Jakhri	Jotu Ram
Kalmog	Surat Ram
Khiuncha	Jai Singh
Kuhl Patena	Bhinda Ram
	Tholi Ram
Larsa	Sidhu Ram
Nahra	Prem Singh
Pat	Guri
Rampur	Choba Ram
Sarahan	Khoina Ram
	Safu
Sarpara	Kala Ram
Seri Majhali	Lachmni Dass
Shaneri	Shawnu
Sholi	Jari
Tutu	Shunku
Rohru-Tehsil	
Banoti	Kanti
	Sunku
Dali	Bhace Ram
Jakha	Harsakh
Khash Dhar	Mangal Dass
Kwar	Balmu
Rohal	Chandi Ram
	Halku
	Lungi Ram
Sunda—Bhunra	Gian Chand
Theog-Tehsil	
Balwa	Haria
Chamhech	Balku
	Beria
	Sabla
Dagbali	Charnu
	Dhankla
	Sarnu
Darjoli Dhar	Shanku
Ghund	Dhana
Jadeog	Anpur
Jadun	Dhanu
Janahan	Jahad
	Rangi
Kelwi	Jania
Kufta	Sadh Ram
Sai	Malia
Shaddi	Gadu
	Mehtu
Thathal	Haru

Name of Villages	*Name of Craftsmen*	
DISTRICT MANDI		
Karsog-Tehsil		
Alsindhi	Mathu	
Bamna	Bharia Ram	
Barare	Heera Ram	
	Masico	
Dhurmu	Surat Ram	
Kandhi	Shavobru	
Kharkan	Chuni Lal	
Nagraun	Barjw Rukmani	
	Dropdi	
	Jalam	
Randaul	Huna Ram	
	Lokhu	
	Manio	
Balhi	Bhatku	
	Mani Ram	Shawl Design
Darun	Hirda Ram	
Jimjema	Bhikti Ram	
Petu	Chaman Lal	
Sagwari	Sant Ram	
Tikri Machhara and Chauntra	Balku	Woollen Carpet
	Chintu	
	Sumiti Devi	
Traila	Bhagi Chand	Shawl Design
	Bhagi Ram	
Sundarnagar-Tehsil		
Maloh	Bhagat	
	Chamaru Ram	
Purana Nagar	Achan Dass	
	Bangalu Ram	
	Digu Dass	
	Jiwan Singh	
	Kasu Dev	
	Kathu Ram	
	Kausalyon Devi	
	Payari Devi	
	Tila Ram	
SIRMUR DISTRICT		
Paonta-Tehsil		
Bitharku	Jwala Ram	
	Baryam Singh	
	Gondi	
	Karma	
	Mangta	
Misarwala	Alic	
	Ninna	
	Gohmmad Sherif	
	Rehmatula	
	Sakori	
	Sher Mohmmad	
Nihalgarh	Prakash Piari	
Pipliwala	Cholti Devi	
Rampur-Banjaren	Bundu Khan	
Sakhauli	Naina	
Rainka-Tehsil		
Bandal	Bishu Ram	
Bandil-Dhadas	Shamkoo	
Bhog-Bateuri	Giwana	
Bobri	Koolgu	
Charna	Bholar	
	Hookmi	
	Jhakloo	
	Kalto	
	Meena	
	Merju	
	Premu	
	Ransa	
Chauras-Tarna	Jhaitakoo	
	Rooldu	
Chukkar	Laboo	
Chunvi-Bor	Mirzoo	
Deona	Nakhsoo	
Did-Bagar	Chantoo	
Garari	Chotu	
Gandhuri (a)	Chonela	
	Gorkoo	
Jarag	Bindroo	
Manal	Premu	
Naura	Dewaroo	
	Dhani	
	Sania	
Panar-Kalyan	Mogi	
Sangrah	Salku	
Shalawara	Raiya	
	Rauloo	
Shamra	Kesha	
Thanga	Chokha	

APPENDIX III

Village Schedule of Industries and Crafts

District———— Sub-Division/Tehsil/Sub-Tehsil————

P.S.————N.E.S. Block (if any)————

Village————

GENERAL DESCRIPTION OF VILLAGE

Part A————

Describe briefly :

(i) Area of the village in acres — (i)————

(ii) Population of the village — (ii)————

(iii) Approximate number of families in the village — (iii)————

(iv) Various sections in the village corresponding to communities and their names

Name of community *Name of community*

(iv) (a)———— (e)————
(b)———— (f)————
(c)———— (g)————
(d)———— (h)————

(v) Distance of the village from nearest Railway Station (miles) — (v) ————

(vi) Distance of the village from nearest Motor road (miles) — (vi)————

(vii) Distance of the Village from P.S./Tehsil/Sub-Tehsil/Sub-Division headquarters (miles) — (vii)————

(viii) Is there an Industrial/Crafts, Co-operative Society in the village ? Write the name of the Co-operative Society and specify names of communities and castes who are its members.

(viii) (a) Name of Society :————

(b) Members 1. ————
2. ————
3. ————
4. ————
5. ————

Artisan Communities in the Village (Tribal and Non-Tribal)

part B-I

Name of Caste or community	Approximate number of families in each communities	Total number of adult workers in each community :		Number of families of each community working under cooperation	Number of families of each community working in own houses or in work-shops set up by their employers	Are there any villages in the neighbourhood where branches of these communities live ? If so, give name of village (s).
		Males	Females			
1	2	3	4	5	6	7

Industry of Craft Practised by each Community.

Part B-II

1. (a) Name of Artisan Community———————————————————
   (b) When did the community come to this village ?———————————————————
2. (a) Name of Industry Craft———————————————————
   (b) How old is this Industry/Craft in this village ?———————————————————
   Who were the patrons ?———————————————————

Name of articles produced in the industry/Craft. Describe the articles and mention approximate sizes and heights	Is the article produced for community's own use entirely ? Describe whether for domestic or ceremonial purposes.	Is the article produced entirely for other communities in exchange for money or Kind ? If so, who are the customers and to which communities do they belong ? (i) Are they for domestic use? (ii) Are they for ceremonial or ritualistic purposes ? If so, for which ceremony or ritual ?	Is the article produced for sale in open markets-Hats and Melas ? Mention the markets Hats or Melas and the occasions.	Is the article made to the order of middlemen who advance money and undertake marketing facilities.	Main material used for each article and its cost.
1	2	3	4	5	6
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

*Describe legends or myths current on the origin of the community.

Part B-II *(Contd).*

Subsidiary material used for each article and its cost	Whether material used is imported and, if so, from where? Specify names of materials imported	Quantity of main materials used in manufacture of each article and percentage value of subsidiary material	Who gives the designs ? (Specify for each article)	Give the names of the designs and myths or stories behind the names, i e., explanation of what the design stands for and the shape or decoration of objects	Describe colours used. How are the colours obtained ?	Out-put per head per week/month by skill craftsman.
7	8	9	10	11	12	13
1.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						

Remarks : 1. Nature of Industry/Craft (a) Seasonal/Perennial ——————————

(b) If seasonal what other subsidiary profession the community is engaged on. (Specify name of profession)——————

——————————

2. Nature of Employment (a) No. engaged part-time (during work season)——————

Industry Craft (b) No. engaged full time (during work season)——————

3. Difficulties in Development of Industry——————————

4. Prospects of Industry——————————

General Description of Workshop and Tools used in the Industry/Craft

Part B-III

1. Name of Artisan Community————————————

2. Name of Industry/Craft————————————

Tools used (Describe tools). Give pencil sketches and photographs separately	Who make these tools and from where are they imported ?	General description of workshop (use separate sheet of paper if necessary).
1	2	3
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Production Process of each Article

Part B-IV

1. Name of Artisan Community———————————————————

2. Name of Industry/Craft———————————————————

3. Name of Article Produced———————————————————

1. Describe production (Please describe stage by stage and take photographs wherever possible. Photographs should be supplemented by pencil sketches of surface forms, designs, shapes, colours and processes of paper if necessary for sketches of stages). (i) First Stage (ii) Second Stage (iii) Third Stage (iv) Final and finishing Stage 2. (i) Total price of material used for the article (ii) Cost of conversion into finished (wages etc.) (iii) Usual sale price of finished products.	

List of Skilled Craftsmen

Part B-V

1. Name of Artisan Community———————————————————

2. Name of Industry———————————————————

Give a list of very skilled craftsmen of each community	Period for which craftsman is occupied in his trade in a year and number of hours per day	Wages earned (Average per month for each craftsman)
1	2	3